

**Simply put**  
**Quarterly**  
**edition**

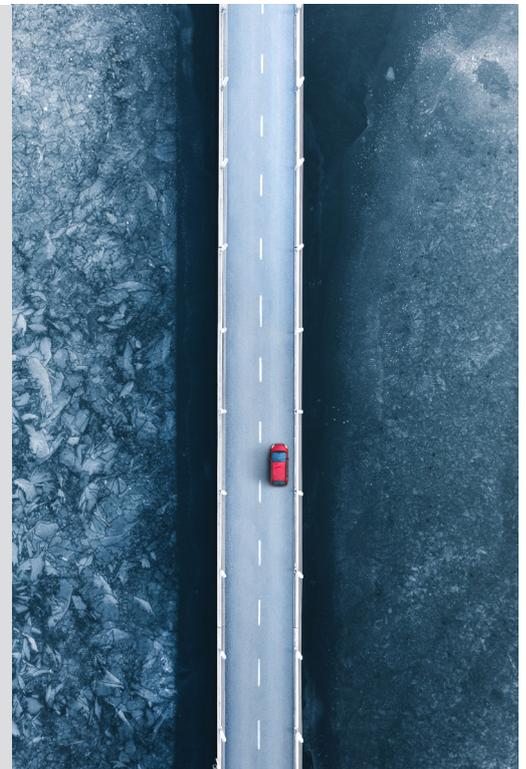
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Q1 2023

**Key points**

- The traditional 60/40 portfolio endured its most significant blow in 40 years in 2022, as both equity and fixed income markets took a hit. Before declaring the end of the conventional portfolio structure, however, investors should remain objective and consider its past success. **See p.2-4**
- Our current multi-asset portfolio positioning has moved from very defensive to prudent, with a preference for growth-friendly assets, in line with the increasing odds of a soft landing. **See p.5-6**
- Our nowcasting indicators signal the world has entered a global recession. The recent softening of inflation, coupled with central banks easing hawkish policies ahead of schedule, have increased the likelihood of a soft landing. **See p.7-9**
- Most traditional asset classes offer limited protection during a high inflationary regime. It is our view that inflation swaps are more effective inflation hedges than inflation linkers hedged for their duration. **See p.10-12**
- Alternative Risk Premia and Portfolio Insurance can improve diversification beyond traditional risk premia and volatility this year. However, their performance is complex and caution is warranted. **See p.13-14**



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The lesson of last year is that 60/40 portfolios should not be ditched.

# THE CIO'S PERSPECTIVE

## 60/40 portfolios: the end game?

Aurèle Storno  
Chief Investment Officer



### Need to know

- The 2022 failure of 60/40 portfolios may trigger a pause for thought, but we are holding back from calling their demise.
- An essential lesson from 2022 is that cash is (sometimes) king and, as such, is an explicit way to control risk in the case of diversification failure.
- The wealth destruction across investment portfolios has been large and the recovery time will be longer than it was in the 70s. Investors should consider focusing on investment solutions geared towards capital preservation.

What a year! 2022 marked the tenth anniversary of our flagship multi-asset investment solution – All Roads – but we started the year with a sense of trepidation about how badly it might unfold. Markets were dealt a poor hand throughout the year, but we are proud to say our strategies exhibited a resilience consistent with our investment philosophy and in line with our expectations. That said, not everything worked. In fact, not many things worked, so it was down to our last line of defence to protect our assets. Don't get us wrong, we are never happy with a negative annual return, but 2022 was a tough test for multi-asset strategies and underlined the robustness of our guiding principles and techniques at a time when the traditional 60/40 portfolio endured its most significant blow in 40 years.

Resilience was even more important as new economic shocks (that have been compared to the 1970s or 80s) were not something that could be back-tested using all the instruments we trade within All Roads, given their lack of history. But some of our key principles – such as drawdown management techniques – are agnostic to the reasoning behind such shocks, which ultimately deal with the consequences impacting financial markets and instruments. While many investors spend a lot of time deciphering these back-stories, we prefer to focus on the discipline that should help us preserve capital and accumulate performance over the long run, irrespective of the cause of the crisis or each possible scenario.

We find ourselves presented with a great opportunity to reflect upon what we have learned over the course of 2022. It can be summarised through three topics. Firstly, we are refraining from calling an end to the 60/40 portfolio as we feel its recent failure must be reconciled with its prior success. Secondly, we think investors should reconsider what “risk control” means and the difference between statistical and explicit diversification. Finally, as much as we see commonalities between the 70s and today, we think it is of utmost importance to understand how both periods differ – particularly from the perspective of how long it will take for portfolios to recover. In summary, it was another year rich in lessons. Welcome to the sixth edition of our quarterly *Simply put*.

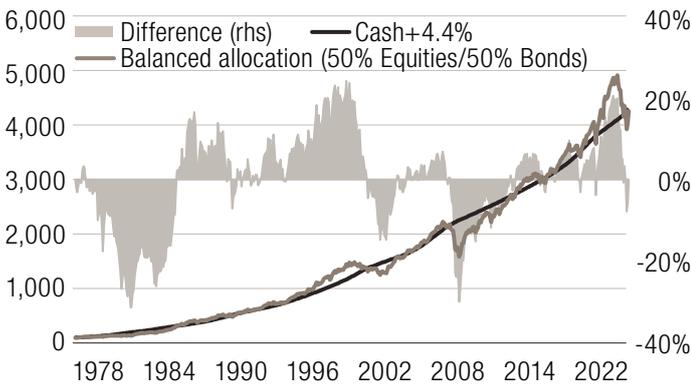
### The dusk for 60/40 portfolios?

Following terrible performances for both fixed income and equities, it is incredibly tempting to pronounce the death of 60/40 portfolios. But we all know that little diversification was to be found anywhere in 2022 within the liquid asset spectrum. As a multi-asset manager providing different solutions (including more traditional “60/40” portfolios along with our All Roads franchise), we believe that investors should remain objective. First and foremost, we think that in order to correctly read the year's performance, we need to take a step back and understand the performance of 60/40 portfolios in previous years. Figure 1 shows the performance of a 50/50 allocation,<sup>1</sup> compared to what we believe is its long-term return potential or “benchmark”: cash +4.4%.<sup>2</sup> Since the late 70s, the return proxy is well matched to the 50/50 allocation over the long run, although we note periods of significant (but temporary) difference. Two periods are strikingly different: the late 70s / early 80s and the post-Global Financial Crisis (GFC) period, which was particularly exaggerated post-Covid (2020-2021). The first period shows an underperformance of the balanced solution by 30%, while the recent one shows an outperformance of around 20%. A key distinctive feature of both periods is the level and direction of rates: high and rising during the 1970s (amid generally prolonged “quantitative tightening” conditions); low and declining in the 2020s (amid generally prolonged “quantitative easing” conditions,

<sup>1</sup> As our readers are spread across the world and some refer to 60/40 portfolios as 60% fixed income, while for others it is 60% equities, we are using a 50/50 bonds/equity allocation to suit most investors with a traditional allocation.

<sup>2</sup> To derive this natural rate of excess return, we simply calculated the excess return above cash necessary for a balanced allocation to spend as much time above and below the target over the whole period. We note that this excess return would be consistent with an excess of approximately 7.0% for equities and 1.7% for bonds over this period, which seems sensible to us.

**FIG. 1 50/50 ASSET ALLOCATION PERFORMANCE VERSUS LONG-TERM EXCESS RETURN**



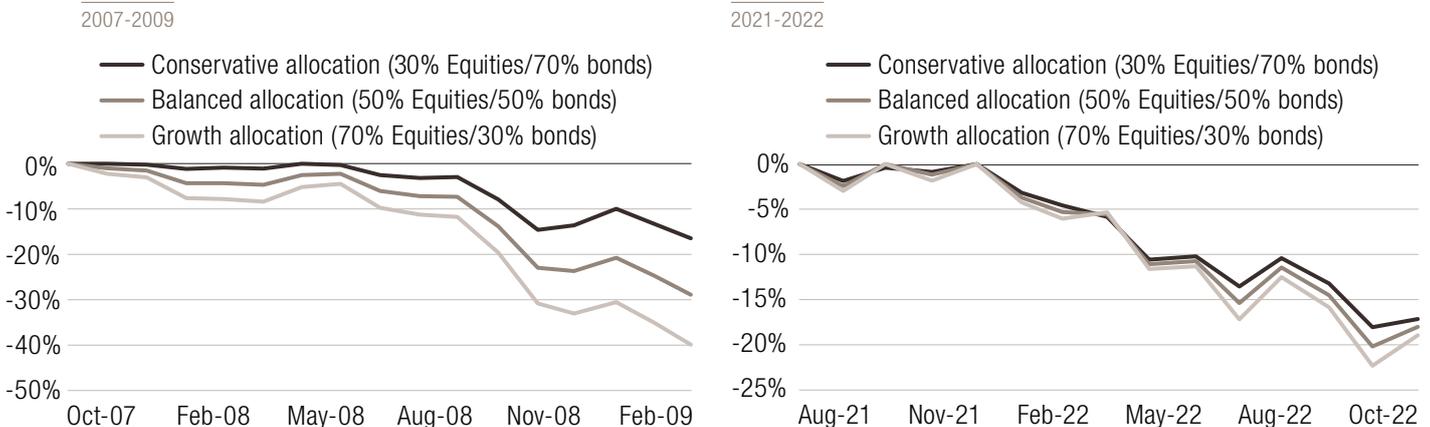
Source: LOIM, Bloomberg.

until recently). There are two conclusions that can be drawn from this chart:

1. The recent normalisation of rates explains the underperformance of balanced portfolios in 2022. To anticipate further underperformance, one must expect rates to rise further from current levels over the longer run.
2. This negative performance needs to be balanced with the abnormal performance witnessed during 2020 and 2021: amid extraordinary levels of central bank liquidity and large rounds of fiscal stimulus, passive solutions in particular benefited from a backdrop that is less likely (if not unlikely) to happen again in coming years, in our view.

This longer-term, historical perspective calls for prudence when betting on the end of the 60/40: it has underperformed, but such underperformance has already happened a few times previously. It is certainly not a timing indicator for future performance, but we would argue that the probability of a 50/50 allocation delivering its “natural excess return rate” in the future is now higher than it was in late 2021.

**FIG. 2 COMPARATIVE PERFORMANCE OF ASSET ALLOCATIONS IN 2008-2009 VERSUS 2022**



Source: Bloomberg, LOIM.

**Statistical versus explicit diversification**

The lesson of last year is that 60/40 portfolios should not be ditched. Yet, another important lesson is that risk profiling (or control), based on long-term correlations, can put investors in a particularly uncomfortable situation. We would argue more generally that using long-term average risk metrics as a guide for asset allocation is prone to failure, as happened in 2022. Covariance structures can be volatile enough to challenge the most well-conceived diversification technique. In other words, what may have worked for over a decade can suddenly breakdown in a matter of quarters, if not months.

Figure 2 shows the comparative performance of balanced solutions with different expected levels of risk, from conservative to growth. These solutions are usually based on the assumption that past performance and risk levels are expected to be repeated in the future. Clearly, the 2007-2009 GFC reassured investors that their risk profile was behaving as expected (but not necessarily as hoped for). Then 2022 presented a shock from two perspectives: different risk profiles ended up at similar levels, down 15% to 20%, while the paths they followed were also surprisingly (and frustratingly) similar. These traditional allocations plan for equity performance to compensate for bond weakness and vice versa. This does not necessarily assume full negative correlation, but does anticipate a weak one at least.

Our All Roads approach also suffered in 2022 (a long-only multi-asset approach does not go up when all assets are going down, with some small exceptions), but several principles helped mitigate losses and preserved capital: dynamic risk-based rebalancing, dynamic overlays, broader diversification and, above all, drawdown management techniques. “Not investing is also an investment decision” was an essential mantra for us in 2022 and we have been relying on cash as a way to explicitly control our risk exposure. Finally, scaling our various All Roads portfolios to their respective risk profiles, but with similar allocations (making use of leverage and dilution into cash, whenever appropriate) has delivered performances consistent with the hierarchy from conservative to growth.

**1970s versus 2022**

While similar, today is not entirely comparable to the 1970s. Figure 3 illustrates two elements that we believe all investors should consider. The first issue that made 2022 so complicated was the size of the fixed income drawdown, particularly when compared to the volatility of the asset class. This has been a challenge for risk-based investors in particular (albeit depending on the nature of their risk metrics), but more generally for traditional multi-asset investors as well. The second challenge was the realised drawdown compared to the end yield, which is a proxy of how many years of yield will be required to recover from the drawdown (at a constant yield).

The chart on the left of Figure 3 highlights the historical ratio of realised drawdowns to realised volatility for US bonds (proxied by US 10 year futures), as well as realised drawdowns to end yields (proxied by US 10 year yields). While bonds drawdowns in the 70s were significant, they tended not to be bigger than one or two times their volatility (using a simple 12 month rolling measure), which suggests the drawdowns were not particularly “abnormal”. The more recent drawdown is different and reached more than three times the realised volatility. With regards to returns, the end yield in the 70s was much higher following a drawdown (and also before), thus investors could generally recover their losses within one year just by holding onto their bonds. Yields in dollar terms barely surpassed 4% in 2022, while fixed income drawdowns reached almost four times that yield. In other words, it would take four years to recover from the drawdown, assuming yields stayed put.

We have less historical data for other global bond markets, but the issue is similar, if not worse. The chart on the right shows the same calculation over the past 30 years for a Global Treasury index: drawdown to yield is very similar, unsurprisingly, while

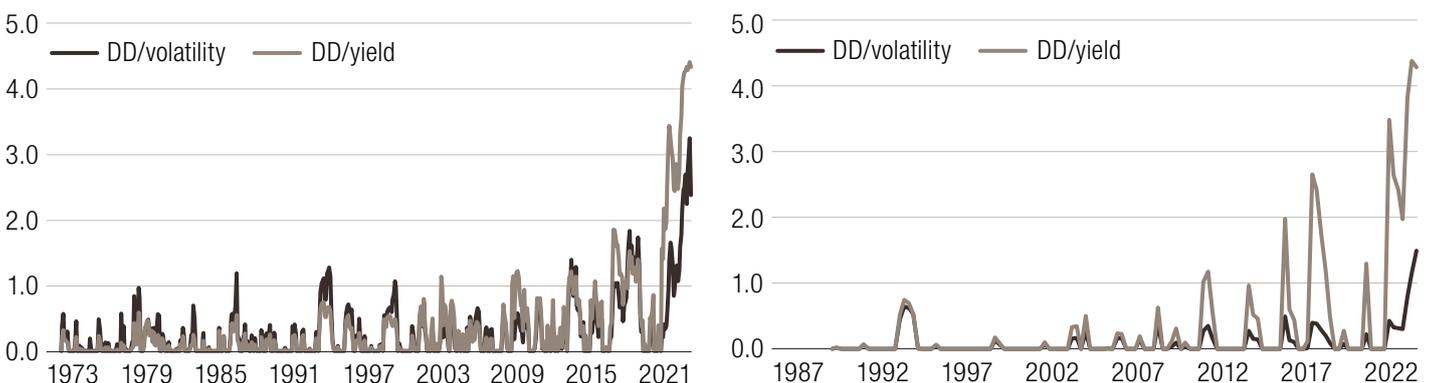
the drawdown to volatility differs a bit, due to cross-market diversification and the fact that volatility has risen somewhat more in non-US bond markets (e.g. Eurozone, UK).

This is a simplified view of the bond world, but it reveals a real difference from 40-50 years ago. Why does it matter? Because recovering from the fixed income decline of 2022 will take much longer and we owe that to the unprecedented pace of the rise in (real) yields after years of zero interest rate policies (ZIRP). While this is not a permanent destruction of capital, it still matters. This time around, central bankers have triggered a massive disruption: first, by letting inflation rise too rapidly and then by repressing it with (too much) strength. That will be a burden for years to come.

This latest quarterly edition of *Simply put* discusses a variety of topics all related to the lessons from 2022. Our portfolios are now positioned for a “soft-landing”, but we are also looking at the flip side of this scenario – the possibility of a hard landing. Here, cash and bonds will probably have their say. Our special focus considers how inflation-related assets should be used, listing the dos and don’ts we have discussed throughout this (inflationary) year. Finally, our research efforts continue, with a focus on different sources of diversification, such as alternative risk premia, which boost our capabilities thanks to our broad range of systematic strategies.

**Simply put, 2022 was not 1979 and calling the end for 60/40 portfolios is too definitive in our opinion. However, investors will bear the consequences of 2022 for a long time, presenting another opportunity to question asset allocation.**

**FIG. 3 BONDS’ DRAWDOWN TO VOLATILITY RATIO AND DRAWDOWN TO YIELD RATIO IN THE US (LEFT) FOR THE BLOOMBERG GLOBAL TREASURY INDEX (RIGHT)**



Source: LOIM, Bloomberg. US bond volatility and drawdown based on TY1 Comdty, US yield based on USGG10YR Index, Global Bond volatility and drawdown based on Bloomberg Global Treasury Index hedged USD (BTSYTRUH Index), yield based on same index Yield to Worst data. All monthly data; realised volatility based on rolling 12 months.

# PORTFOLIO TRENDS

## Soft-landing ready, hard-landing wary

Alain Forclaz  
Deputy CIO



### Need to know

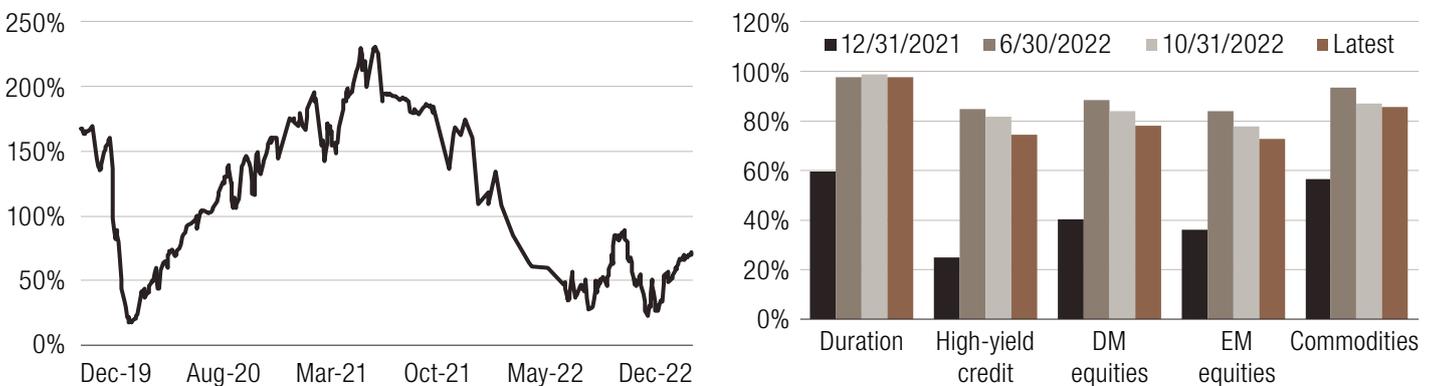
- Our cash exposure declined significantly between Q3 and Q4, but not enough to suggest we are positive about what is coming next.
- Volatility levels indicate a preference for equities over bonds for now, as bond volatility remains near all-time highs.
- Our tactical signals agree with that, marginally overweighing growth-sensitive assets. We are soft-landing ready, but with caution.

Our All Roads franchise experienced meaningful allocation moves throughout the year, as a result of changing market dynamics captured by our dashboard. Changes in trend signals, the ebb and flow of risk appetite and, more importantly, the largely negative performances observed across most asset classes shaped our allocation. Recently, we reduced the large cash pocket that was a key feature of our 2022 allocation. The time has now come to analyse how this re-risking happened and more importantly why it happened. We are getting our gear ready for 2023 while also – like most asset managers – scratching our heads around the “hard-landing” question. Our current allocation is “soft-landing”-friendly but we are keeping our finger on the trigger should the “hard-landing” scenario gain more momentum.

### Re-risking with discrimination

Our market exposure has increased since the end of September, having entered a tumultuous Q4 2022 with an extreme bearish position. Subsequently, as most asset classes stabilised then rose, the opportunity cost of not being invested materialised and we began to deploy capital once again. Our market exposure increased from 23% at the end of September to over 70% as December drew to a close. The left-hand side of Figure 4 shows how meaningful this re-risking has been in comparison to the very high cash levels witnessed earlier in the year and in 2020, although our total exposure remains far below the level seen in early 2021. As far as relative allocation, the right-hand side of Figure 4 illustrates how volatility – a key ingredient for our asset allocation – took different paths over the course of the year depending on the asset class. While the volatility of commodities and equities has receded since Q2 2022, it has remained near all-time highs for bonds. This is the first element that explains why a larger part of our re-risking has been implemented through growth-friendly assets, rather than recession-friendly assets (duration). This is a key reason why we feel our exposures place us in a situation where a “soft landing” is seen as the best possible scenario: in spite of current volatility, equities and credit spreads should eventually bring value to investors over the coming months.

**FIG. 4 ALL ROADS’ MARKET EXPOSURE (LEFT) AND PERCENTILE VOLATILITIES (RIGHT)**



Source: Bloomberg, LOIM.

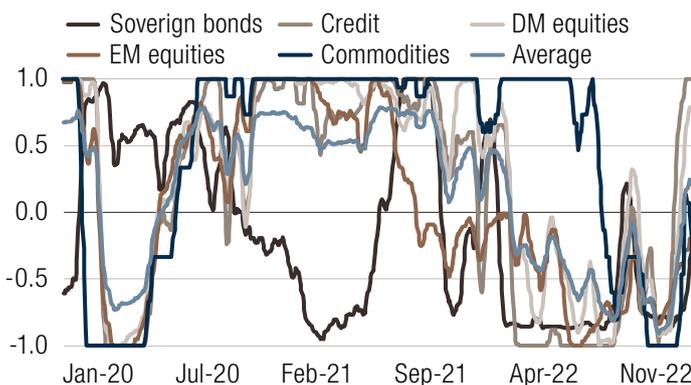
### From downtrend to uptrends

The second element that explains the nature of our portfolio re-risking is our trend strategy, which drives part of our tactical overlay. Figure 5 illustrates how our trend signals have evolved since 2020, grouped by asset class. 2022 shows striking patterns: at the start of the year, signals were negative across the board, from bonds to equities, except commodities which enjoyed a positive signal until the summer. Since then, as discussed in the last edition of our quarterly *Simply put*, even the powerful commodity trend declined and Q3 drew to a close with nothing but negative signals. The situation was quite different in Q4:

- Developed market (DM) equities and credit are now displaying very positive signals – a noticeable difference with Q3 although they had already enjoyed a strong summer rally, which faded.
- Trend signals for commodities and bonds remain negative – again, a pattern which is soft-landing friendly.
- Interestingly, trend signals treat DM and emerging market (EM) equities quite differently: DM equity signals are now globally positive, while those of EM equities remain in negative territory. Again, this indicates that the narrative currently animating markets concerns a “soft landing” (which is a purely developed markets story). How China and emerging markets may stabilise their respective markets is not a story that investors are buying into at present.

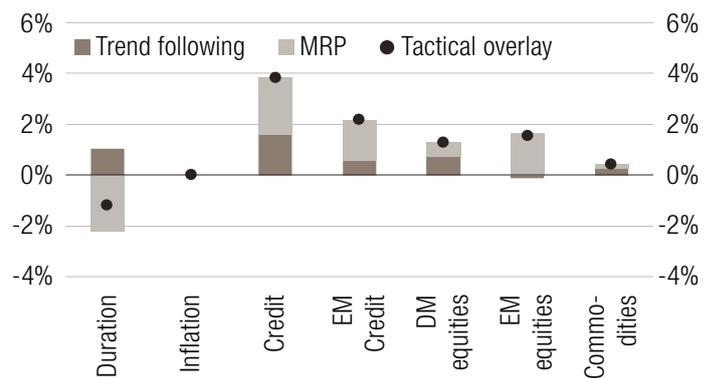
In short, positive market sentiment against the backdrop of a soft-landing narrative is the driver of our allocation. What is the magnitude of this effect?

**FIG. 5 LOIM TREND-FOLLOWING SIGNAL**



Source: Bloomberg, LOIM. As at 30 November 2022.

**FIG. 6 TACTICAL ALLOCATION POSITIONING IN ALL ROADS**



Source: Bloomberg, LOIM, as at 18 December 2022.

### Dipping a toe in the “soft-landing” ocean tactically

As also discussed in the last quarterly *Simply put*, we have expanded our tactical allocation tools with a strategy we call “Macro Risk Premia” (MRP). Previously, our tactical overlay only comprised of market-driven signals: a trend-following strategy and a bond & commodity carry strategy. We now also incorporate nowcasting indicators, mainly based on economic data, which are then turned into a dynamic allocation based on risk premia’ sensitivity to business cycle fluctuations. Figure 6 shows how our signals currently stack up by combining the trend-following and MRP allocations in our most representative strategy (carry overlays being intra-asset class strategies do not affect asset allocation meaningfully). Overall, our dynamic asset allocation leads to a marginal overweight in equities and credit. When taken in isolation the macro part of these signals is supportive of this positioning: the growth deceleration has created a recession scare, but (as discussed in the next section) the softening of inflation and an earlier than expected easing of central banks’ hawkish policies have increased the likelihood of a soft landing. However, the small size of the capital allocations shown on Figure 6 highlights that this conviction remains limited for now. These allocations, combined with our current 30% cash weighting, cannot be called bullish, but we acknowledge that our positioning has become marginally more constructive than it was in Q3. And 2022 reminds us how quickly things can change, in both directions.

**Simply put, our allocation has moved from being very defensive to prudent, with a preference for growth-friendly assets, in line with the increasing odds of a soft landing.**

# MACRO

## Now that recession has your attention

Florian Ielpo  
Head of Macro



### Need to know

- In 2023, market attention will likely be on the declining growth situation rather than real rates.
- Our nowcasting indicators signal a world recession has already started.
- This is not yet a hard landing, the world is still benefitting from past fiscal stimuli and the Eurozone is not yet in recession.

We closed the fourth quarter on what proved to be a tepid rally, as the passing of the inflation peak was less comforting to markets than initially expected. 2023 starts on the ashes of a difficult year, and a rising number of investors are becoming more convinced that we are not out of the woods yet. The year kicks off amid the still unresolved inflation situation as well as a burning question connected to growth: can our central banks engineer a soft landing in spite of the extremely large inflation shock? In other words, can we get rid of inflation without a sharp increase in unemployment? As discussed in the previous section, a convergence of elements from macro data to market signals are driving the soft-landing narrative – the story of a “shallow” recession. What are the odds of a soft landing? And why is that important to markets? Here we offer our quantitative views on this complex topic.

### Markets' attention will be on growth

An essential first step is to understand how important the macro picture is to investors at the moment. Figure 7 provides hints to how that question can be answered. By narrowing down macro factors to three dimensions – growth, inflation and real rates – the chart measures how each of them, once regressed against equity returns, can help explain market returns currently. Market returns are proxied with S&P 500 returns, while the macro factors used reflect the changes in US growth and inflation surprise indices, as well as the variations in US 10-year real rates. When equal to 0% (resp. 100%), the chart expresses how macro forces explain 0% of returns (resp. 100%). The key takeaways from Figure 7 are as follows:

- Focusing on the 2007-09 period, real rates progressively became the main factor being priced into market returns, as the Federal Reserve (Fed) commenced hiking rates. From that point (February 2008), market attention clearly refocused on growth until the end of that year and this factor retained a large explanatory power in the variation of asset prices (down).

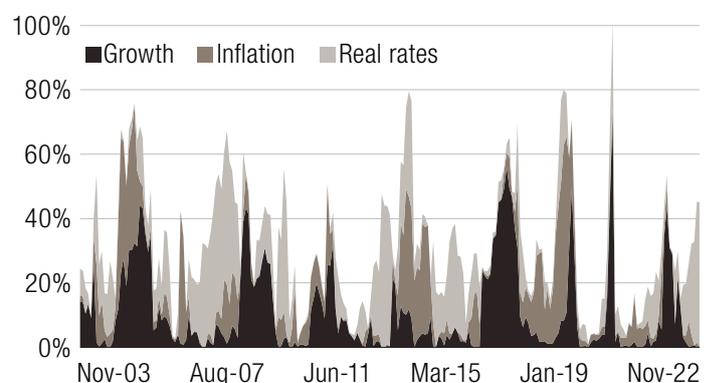
- Today's situation is similar to back then: the importance of real rates steadily increased during 2022. Yet, if a material slowdown happens, real rates could become less important in terms of market perception.

The slowdown in 2008 led the market to refocus its attention on the growth dimension, which started to exert a negative influence over companies' earnings. This sequence is very important to today's situation: there are signs of a slowdown all over the place, but the market's narrative currently remains linked to real rates. Their stabilisation is good news, as long as markets do not look too hard in the direction of growth. The “peaking inflation” narrative has attracted a lot of attention and the stabilisation of long-term rates is offering some respite for markets. Trying to judge the extent of the slowdown is of an utmost importance now and market attention is likely to shift towards growth.

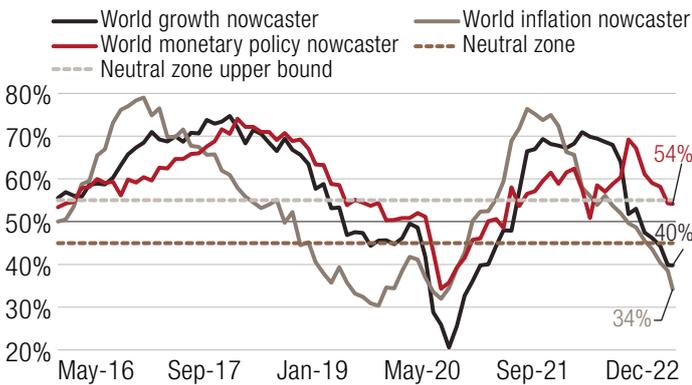
### Nowcasting the recession

The primary reason for us to spend time and energy around nowcasting signals is to gauge whether a recession exists or not. Figure 8 shows the most recent evolution of our nowcasting signals and their message is remarkably clear: world growth is in recession, there should be fewer negative inflation surprises and monetary policy should start to moderate. Beyond this overall perspective, paying attention to detail matters when trying to decipher the prospects of a hard landing.

**FIG. 7 EXPLANATORY POWER OF GROWTH AND INFLATION SURPRISES AND REAL RATES VARIATIONS OVER THE RETURNS OF THE S&P 500**



Source: Bloomberg, LOIM. Reading note: this chart shows the determination coefficient of a 12-month rolling regression of S&P 500 returns over changes in the Citi Growth Surprise Index, its inflation equivalent and market 10-year real rates.

**FIG. 8 GROWTH, INFLATION AND MONETARY POLICY NOWCASTERS**

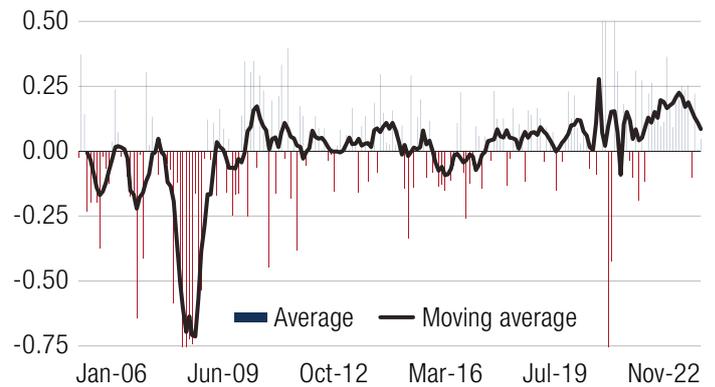
Source: Bloomberg, LOIM.

Focusing on Figure 8 our growth signal continued to decline during Q4 2022. At the end of Q3, our signal was oscillating around what our analysis shows to be the “neutral zone”, keeping the door open to the idea that a recession could be avoided. That ship has sailed: our indicator dates the entry point into a world recession occurred on 19 October. In the US, the message is the same: the US growth nowcaster places the US economy into a recession on 3 October, alongside China’s economy. The situation in Europe is much better at the moment: without a sharp tightening cycle in Q3 and Q4 2022, the Eurozone has not yet experienced the impact of rate hikes. Currently, 61% of the data series comprising our growth signal are declining. That number reaches 70% in the US and 68% in China. The consistency of the message across countries and economic sectors is too large to deny. This is a recession and its depth will depend on the fate of the Eurozone, where growth remains in check. Should the European Central Bank (ECB) act in a controlled way, a synchronised recession across all three regions could be avoided; if it does not, then the global macro picture will be more difficult. This is what happened in the summer of 2008 and is where our attention should be now.

In short:

- The recession is already upon us; it is still fresh in the US and is not yet upon us in Europe.
- The scale of the recession will be a function of the number of country zones that are simultaneously in recession.

The previous times we saw such readings in our growth nowcasters were October 1990, January 2001 and February 2008. These were not yet fully-fledged hard-landing periods, but each of these dates marked the entry point for standard US recessions. Hope remains.

**FIG. 9 AVERAGE REVISIONS ACROSS US ECONOMIC DATA AS A Z-SCORE**

Source: Bloomberg, LOIM. Reading note: (negative means negative revision).

### The lagged effect of stimuli

Even though a large cross section of macro data now point to a recession in the US, there are still reasons to hope for a limited decline in GDP if you look at the revisions of economic data. Economic data is published first as an “initial estimate” and this is later revised by statistical offices when calculations tend to incorporate a larger number of respondents to survey-based indicators. This is notably the case for both the payroll and establishment surveys that are scrutinised by investors all over the world on the first Friday of every month. These revisions are often more noise than signals, as long as the reason explaining these revisions is not the same – a recession. Figure 9 turns the average revision of economic data into a z-score. The black line on the chart shows a centred 3-month moving average to make the message clearer:

- In 2008, the best example of a hard landing, economic revisions became negative over the summer of 2007 before becoming very negative in July 2008, when the hard landing gathered momentum.
- Today’s situation is different. As of late, data revisions have been on the positive side and have been so since June 2021. So far, that typical sign of a hard landing is nowhere to be found.

This last message is essential for today’s situation: we are still surfing the fantastic wave of stimulus from the summer of 2020. The level of savings remains high and should help to cushion the wealth destruction mentioned in the first section of this report.

### The final say

In the end, answering the hard-landing question requires the balancing of two opposing forces:

- How widespread can the recession be? Here, the ECB is increasingly showing signs of dogmatism – a risk that hangs over our heads.
- How long can past and current stimulation continue to cushion the slowdown that our central bankers are trying to induce in their respective economies?

The odds of a soft landing are currently quite high as the Eurozone is not in a recession yet, and positive macro revisions are indicative that the cushion is still there. However:

- Central banks could lose their cool if the cushion continues to fuel inflation – hard-landing risk #1.
- ECB action will only show in the Eurozone in another six months – this could mean the prospect of a hard landing is a topic for H2 rather than H1. In the meantime, we are left with uncertainties, which is not an easy position.

Sentiment could remain volatile in H1 as finding an answer to the hard landing question will probably take longer than expected. Patience is a virtue, that much we know, but how much patience is left in markets? Probably not much after this year.

**Simply put, a soft landing remains a possibility as not all key indicators are flashing red. Should the Eurozone fall into the recession zone, the odds could shift, but that will take time as the ECB has only just started slowing down its economy.**

# QUARTERLY FOCUS

## Tips on TIPS

François Chareyron  
Portfolio Manager



### Need to know

- Inflation linkers are classical hedges against inflation, but they incorporate four features we do not like and are not found in inflations swaps.
- When comparing performance, linkers and swaps exhibit high correlation – only the latter is simpler to trade.
- T-costs and liquidity are also aligned for both instruments, but this is no reason to hold back from swaps.

With 2022 behind us, the time has come to list the lessons learnt during this peculiar year. Unsurprisingly, most of these concern inflation. For years, the inflation hedges held in diversified portfolios have been detrimental to their ultimate performance: this holds true for commodities, as well as exposure to inflation breakevens. Investors can gain exposure to fixed income inflation hedges (loosely referred to as “breakevens”) through two different products: inflation swaps and inflation-linked bonds which have their duration exposure stripped out. As with most inflation hedges, the performance of inflation breakevens since 2006 has been negative: returning about -1% per year, with a volatility of around 5%, for a 10-year maturity exposure. That long-term performance seems unattractive and yet they play an important role when needed: In 2022, the year-to-date performance of a 10-year inflation swap is about +4.6% (as at 31 October, in USD terms). Most traditional asset classes offer limited protection during a high inflationary regime and these two inflation-linked products are a good option to consider for the diversification of portfolios. With the benefit of hindsight, we are now reviewing our exposure: amid this inflation shock, which of these two inflation hedges was the right choice for a systematic portfolio? Bonds or swaps? We believe swaps make more sense for the following reasons:

### More than a Treasury with inflation protection

At first sight, inflation-linked bonds are simple – a sovereign bond with capital protection against inflation. However, when looking at the fine print, several elements blur the picture, which, in our opinion, deserves more attention, especially in the context of systematic portfolios:

1. **Index lag:** Inflation-linked bonds (ILBs) protect the buyer's purchasing power thanks to their floating principal and coupon (if any). Instead of receiving a fixed coupon and principal, both are adjusted to reflect realised inflation. ILBs are subject to

what is commonly called indexation lag, meaning the ILB's value is linked to a lagged value of inflation (i.e. the Consumer Price Index (CPI)). For many countries this indexation lag is around three months, meaning the coupon payment for an inflation-linked bond in June is based on the inflation accrued in March. This technicality becomes more relevant when a bond's time to maturity is shorter, as the CPI's seasonality can create unusual behaviour.

2. **Deflation floor:** Most ILBs include a deflation floor, which guarantees that its principal nominal repayment is never less than the original nominal par amount. The deflation floor can help protect bond buyers from sustained deflation that would otherwise considerably reduce the bond's principal. Nowadays, most countries issuing ILBs also offer a deflation floor, but some major issuers (such as the United Kingdom and Canada) do not offer such protection. This form of optionality can be relatively valuable, especially for bonds issued around the peak of inflation as any pullback in inflation will trigger the deflation floor. At the entry point of an inflation shock, this option works the other way around, and may not be very investor-friendly.
3. **The yield beta:** A key element when pricing inflation-linked bonds is the so-called yield beta, i.e. the strength of the relationship between real and nominal yields. Investors usually place it between 0.5 and 1.0, which is confirmed by Figure 10. This relationship, however, is notoriously unstable during periods of market stress as temporary factors, such as liquidity, blur the picture. As a result, splitting duration from inflation exposures can prove tricky at times.
4. **The hidden duration effect:** in the case of ILBs, the nominal and coupon are a function of inflation. When inflation rises, their value grows and the duration of the inflation linker increases – which is not an attractive property. We most require inflation hedges when inflation is rising and surprising on the upside; yet this element of surprise prevents us from actively managing duration ex-ante. Obviously, this effect can be minimised by continuously adjusting the short duration leg of a synthetic breakeven. However, it seems unattractive to us that investors are required to be extremely vigilant in monitoring the progression of the duration in their portfolios at a time when duration is becoming a higher risk factor than usual – a poor quality for a hedge.

Inflation swaps are devoid of those technicalities – with the exception of the indexation lag – making them, in our opinion, better tools for systematic portfolio managers.

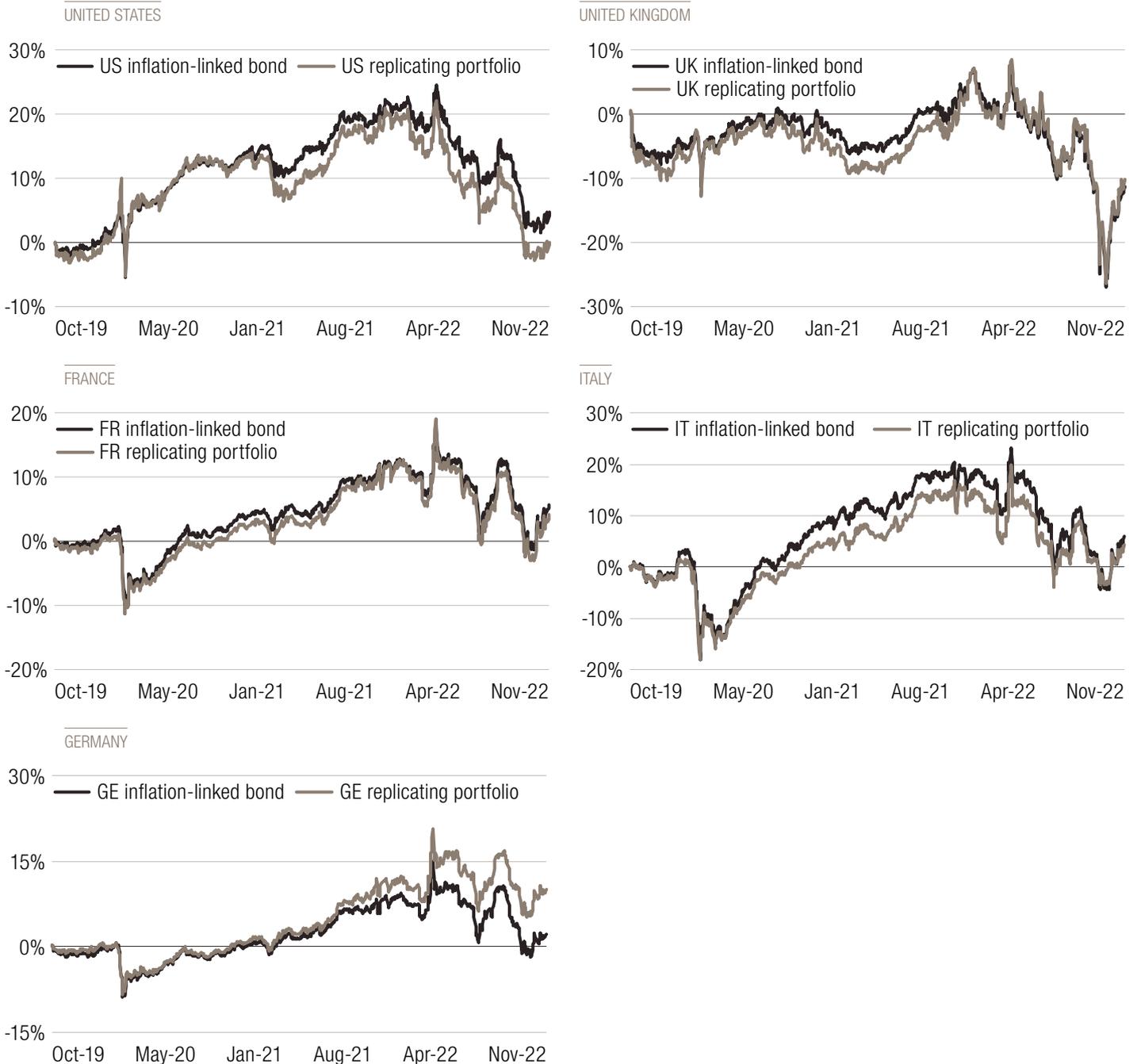
**Comparing performance**

There are two ways to compare the performance of ILBs and inflation swaps depending on an investors' need. If the goal of investing in ILBs is inflation sensitivity, then one should compare a synthetic breakeven (i.e. long ILBs, short sovereign bonds or short bond futures) to rolling an inflation swap. On the other hand, if real rate sensitivity is of interest, then one should compare an ILB to a portfolio of rolling bond futures (or a physical sovereign bond) and a rolling inflation swap. Obviously, the position (either long or short) in the nominal asset will be identical, up to the sign in both cases.

In other words, the quality of the replication is not affected by the choice of the comparison used.

In our case, our starting point is a portfolio of ILBs and we will show that we can replicate the profit/loss of various ILBs using a portfolio comprising a bond future and an inflation swap, with a dynamic allocation to both. To this end, we have picked five ILBs with roughly 10 years to maturity. We will also use the corresponding 10Y bond futures and Bloomberg indices to replicate the performance of rolling a 10Y inflation swap in the respective markets.

**FIG. 10 COMPARISON BETWEEN THE PERFORMANCE OF LINKERS AND REPLICATION PORTFOLIOS**



Source: Bloomberg, LOIM. Data from 07/10/2019 to 22/11/2022. US ILB: TII 3 ¾ 04/15/32, UK ILB: UKTI 1 ¼ 11/22/32, GE ILB: DBRI 0 ½ 04/15/30, FR ILB: FRTR 3.15 07/25/32, IT ILB: BTPS 1 ¼ 09/15/32.

## COMPARISON BETWEEN THE PERFORMANCE AND STATISTICS OF LINKERS AND REPLICATION PORTFOLIOS

		US	GB	GE	FR	IT	Portfolio
Inflation-linked bond	Returns	1.9%	-2.9%	0.9%	2.1%	2.8%	0.8%
	Volatility	9.1%	13.0%	7.1%	8.4%	13.7%	7.7%
	Sharpe ratio	0.21	-0.23	0.13	0.25	0.20	0.11
Replicating portfolio	Returns	0.6%	-2.4%	3.3%	1.7%	2.1%	1.2%
	Volatility	10.5%	14.4%	7.1%	9.2%	12.6%	8.3%
	Sharpe ratio	0.05	-0.17	0.47	0.19	0.17	0.14
	Correlation to ILB	0.86	0.95	0.94	0.95	0.94	0.96

Source: LOIM, Bloomberg. Gross of transaction costs. Data from 07 October 2019 to 22 November 2022.

The results of our analysis show that replicating a portfolio of bond futures and inflation swaps does an excellent job of tracking the performance of a 10-year inflation-linked bond. Not only is the correlation very high but the performance profile is similar. That said, the fit is not necessarily as good in all markets, and the reason for that is not completely clear as the intensity of linkers or swap trading in each zone should have some explanatory power to it. For example, in the US, the replicating portfolio underperforms the Treasury Inflation-Protected Security (TIPS), which may be explained by the strong dominance of TIPS trading over swaps in the US.

### Liquidity and t-costs

A suitable proxy for measuring the liquidity premium embedded in indexed bonds relies on the spread of two similar, yet different, measures of expected inflation. The first one is the breakeven rate, i.e. the difference between the yield of a nominal bond and that of an indexed security with the same maturity. An alternative is the rate of an inflation swap, which should reflect investors' expectations about future inflation. The major difference between the two is that the breakeven relies on funded assets, with a finite supply, whereas inflation swaps are derivative instruments. Therefore, one could interpret the spread between the two metrics as an indicator of the relative liquidity premium embedded in indexed securities compared to swaps. We referenced Kim, Walsh and Wei (2019) to define a TIPS liquidity premium as: Breakeven = expected inflation + inflation risk premium - TIPS liquidity premium. Inflation swap rate = expected inflation + inflation risk premium.

$$\text{Inflation swap rate} = \text{expected inflation} + \text{inflation risk premium}$$

$$\text{Breakeven} = \text{expected inflation} + \text{inflation risk premium} - \text{TIPS liquidity premium}$$

The difference between the inflation swap rate and the breakeven equals the TIPS liquidity premium. As we see from Figure 11 for the US, a positive premium signifies relative illiquidity in the indexed bonds market versus inflation swaps.

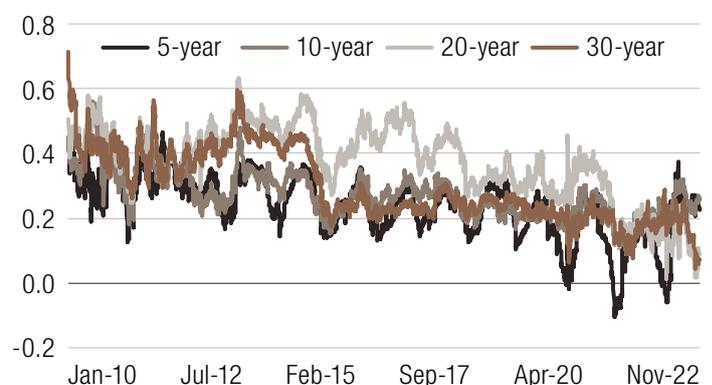
It is important to note, however, that this analysis does not account for the embedded deflation floor. Transaction costs could also be a key differentiator between inflation-linked bonds and a synthetic replication.

Our experience is that the pricing per unit of inflation (DV01) is very similar between inflation-linked bonds and inflation swaps, particularly in Europe and the UK. In the US, where TIPS largely dominate swaps in trading volumes and depth, the comparison turns to the advantage of TIPS.

With their generally similar trading costs and a limited liquidity impact, inflation swaps in the end are a simpler to trade inflation-hedge than linkers. What is more, they make the construction of an asset allocation more explicit as they split its "inflation hedges" (inflation swaps and commodities) from its "declining growth hedges" (duration). Linkers mix the two, turning something that should be simple into something that has unnecessary layers of complexity – no quantitative analysts on the planet will like that: our hearts and brains veer towards swaps.

**Simply put, inflation swaps are more effective inflation hedges than linkers hedged for their duration and this effectiveness does not come at the expense of liquidity or t-costs.**

FIG. 11 GROWTH, INFLATION AND MONETARY POLICY NOWCASTERS



Source: Bloomberg, LOIM. Data from 01 January 2010 to 22 November 2022.

# RESEARCH UPDATE

## Portfolio satellites – beyond traditional risk premia

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Laurent Joué  
Head of Systematic Alternatives



### Need to know

- A portfolio risk-return profile can be enhanced by incorporating satellite strategies, such as Alternative Risk Premia (ARP) and Portfolio Insurance overlays.
- When selecting from the range of available ARP in the market, one should pay attention to in-sample bias.
- Meanwhile, our research proposes that reinforcement learning can help build Option-Like Portfolio Insurance over a rolling window.

Our research efforts in 2022 were mainly orientated towards tactical overlays. Aside from our Macro Risk Premia overlay, which went live in December, we have been keen to investigate other (potential) building blocks for our portfolios. Sophisticated investors usually complement traditional risk premia with additional investments strategies either to better control the risk of their portfolio or to access additional sources of returns and diversification. While we have already mentioned long volatility strategies in previous editions of *Simply put*, this time we are focusing on other satellite strategies: Alternative Risk Premia and Portfolio Insurance. The former has seen its popularity explode with the emergence of *Factor Investing* and the number of ARP strategies available on the market has skyrocketed. The latter has experienced less innovation with the space being dominated by Option-Based Portfolio Insurance (OBPI) and Constant Proportion Portfolio Insurance (CPPI) techniques and their variations.

### Alternative Risk Premia (ARP) selection: navigating the QIS galaxy

The democratisation of systematic strategy investing, boosted by the emergence of Factor Investing,<sup>3</sup> has spurred a gold rush for top providers. While initially built around well-identified long-short equity factors, such as value and momentum, this frenzy for new sources of alpha has given birth to hundreds of Quantitative Investment Strategies (QIS) across all asset classes. Academic financial literature has not been left behind and refers to this new asset class of ARP as the *factor-zoo*. While alpha decay and in-sample bias have clearly been investigated in financial literature,<sup>4</sup> the QIS proposed by

top providers have not been studied as thoroughly. To that extent, our Systematic Alternatives and Equities team has collated a dataset of 1,465 investable strategies with the following properties:

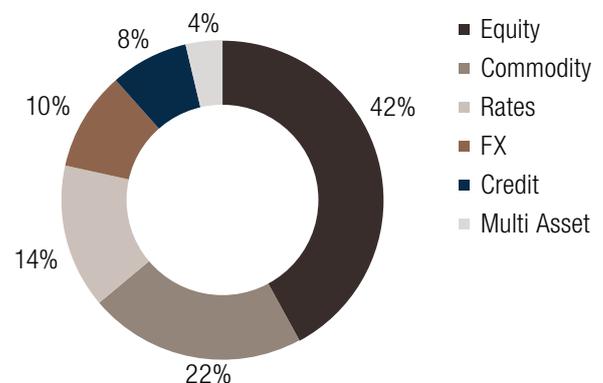
- Ten different providers, across six asset classes (equities, commodities, rates, FX, credit and multi-asset) and 13 identified styles.
- An average of 16.8 years of history is available for each strategy.
- An average of 3.9 years of live track records are available for each strategy.

To measure in-sample bias, we focused on the differences in the Sharpe ratio of a strategy before and after launch. More precisely, for each QIS  $i$  aiming to capture an ARP  $p$ , we constructed a benchmark  $\bar{p}$  as the average risk-adjusted return of all available live strategies tracking the same ARP. We then defined the in-sample bias of a QIS:

$$\text{In-sample bias} = \frac{E_{\text{live}}[r_i]}{\sigma_{\text{live}}[r_i]} - \frac{E_{\text{backtest}}[r_i]}{\sigma_{\text{backtest}}[r_i]} - (\bar{p}_{\text{live}} - \bar{p}_{\text{backtest}})$$

Where  $E_{\text{live}}$  and  $\sigma_{\text{live}}$  denote the mean and standard deviation *conditionally* on the live period while  $E_{\text{backtest}}$  and  $\sigma_{\text{backtest}}$  denote the mean and standard deviation *conditionally* on the backtested period.<sup>5</sup> A positive in-sample bias thus means that the backtest underestimates the ARP Sharpe ratio while a negative bias points towards overfitting.

FIG. 12 REPARTITION OF THE QIS BY ASSET CLASS



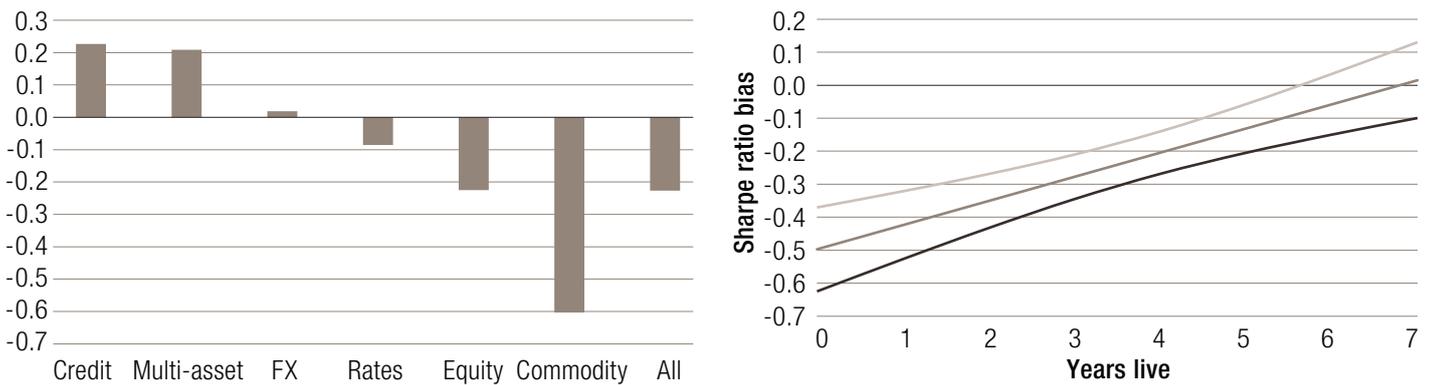
Source: LOIM. For illustrative purposes only. As at December 2022.

<sup>3</sup> See for example Ang, A. (2014). *Asset management: A systematic approach to factor investing*. Oxford University Press.

<sup>4</sup> McLean, R. D., & Pontiff, J. (2016). Does academic research destroy stock return predictability? *The Journal of Finance*, 71(1), 5-32.

<sup>5</sup> These calculations could not have been done using the Probabilistic Sharpe Ratio approach as we do not have the knowledge of the number of backtests and attempts done to obtain those performance track records. We are directly estimating the bias from the data given the large number of QIS, which should be seen as a reasonable way to doing this.

**FIG. 13 IN-SAMPLE BIAS BY ASSET CLASS (LEFT) AND AS A FUNCTION OF LIVE HISTORY (RIGHT)**



Source: LOIM, as at December 2022.

The right-hand side of Figure 13 shows that on average this bias is negative, which underlines the difficulty in selecting a viable source of performance based solely on simulated historical data, although the results may differ between asset classes. The right-hand side of Figure 13 additionally shows that the in-sample bias tends to increase with the length of the live sample (meaning the difference between live and backtested performance decreases). This result however has to be toned down since the set of QIS with the longest history probably suffers from a strong survivor bias.

**Portfolio insurance: A new hope?**

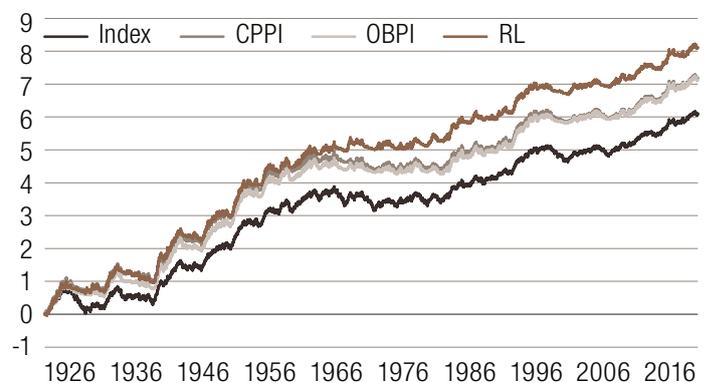
Satellite strategies also enable better control of the drawdown risk of a portfolio. While we have previously mentioned how the drawdown management mechanism in the All Roads franchise was able to mitigate extreme events in multi-asset portfolios, it is not designed to have an explicit trade-off between downside protection and upside participation. To that extent, the financial industry has relied, for a long time, on Portfolio Insurance techniques. Among them, the Option-Based Portfolio Insurance (OBPI) is probably the most understood. It aims to replicate the payoff profile of a call option and thus explicitly exhibits a specified participation rate and downside protection. Such a technique is, however, ill-suited to funds with multiple investors who might enter and exit the strategy at different times as the protection only applies to a fixed holding period linked to the maturity of the option.

To circumvent this difficulty, asset managers usually rely on a different approach that is not based on options structuring but on dynamically controlling the exposure between a seemingly risk-free asset (cash) and the strategy. The most prominent of these techniques is the Constant Proportion Portfolio Insurance (CPPI). Although it alleviates the holding period problem of the OBPI, the upside participation of the CPPI can no longer be explicit and such products face the risk of being “locked in cash”, hence missing upside opportunities.

To free OBPI strategies of the burden of time-dependence, Alexey Medvedev in our team recently proposed that shifting the problem of option insurance from a fixed-horizon to a rolling-window allows for the accounting of different entry points for multiple clients. Although conceptually simple, the problem is technically difficult.<sup>6</sup> Indeed, while closed-form solutions can be derived for OBPI with fixed horizons, such a solution cannot be analytically obtained for rolling-windows due to the high dimensionality of the problem. In this research we leverage recent reinforcement learning (RL) technology to derive numerical solutions to the problem, yielding promising results as exhibited in Figure 14.

**Simply put, beyond traditional risk premia and volatility this year, Alternative Risk Premia and Portfolio Insurance can improve diversification; however, their performance is complex and caution is warranted when relying on them.**

**FIG. 14 SIMULATED PERFORMANCE OF PORTFOLIO PROTECTION STRATEGIES ON US EQUITIES (DETAILS AVAILABLE IN MEDVEDEV (2022))**



Source: LOIM. NB: log scale. Past performance is not a guarantee of future results. Simulated performance results do not reflect actual trading and have inherent limitations.

<sup>6</sup> Medvedev, A. (2022). Option-Like Portfolio Insurance Over a Rolling Window: Introduction and Derivation by Reinforcement Learning. Available at SSRN 4141312.

## IMPORTANT INFORMATION

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