Global Markets Analyst

UK Real Rates — Backcast To The Future

- With UK real rates trading at or near multi-decade highs, we introduce a backcast history of inflation-indexed Gilt yields back to the 1960s, to help put current yield levels and the relationship to inflation in context.
- Our estimated real rates and breakevens rose rapidly in response to the oil shocks and high inflation of the 1970s, embedding risk premia across the curve. Institutional reforms, such as Linker issuance, central bank independence and inflation targeting, helped to re-anchor inflation expectations and compress risk premia.
- Elevated inflation risk premia meant that nominal Gilts outperformed inflation-indexed yields in real terms for much of the 1980s-2000s, but the recent rise in real yields and well-contained inflation risk premia suggest that the hurdle is higher for nominal Gilts to outperform linkers over a long holding period.
- Benchmarking against the current macro environment, real yields do not screen as excessive, and we expect the current steepness to fade eventually, with 30y reals outperforming vs the front end.

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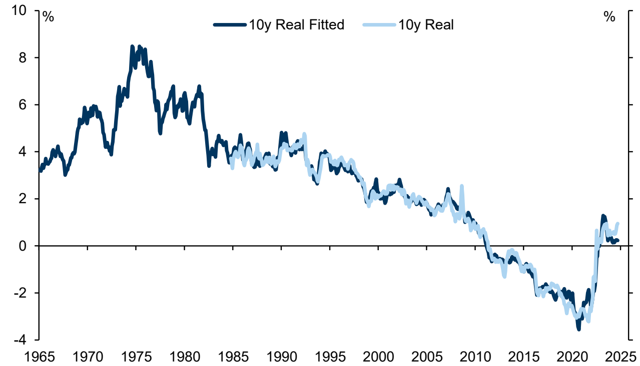
UK Real Rates — Backcast To The Future

UK real rates, measured by inflation-indexed Gilt yields, are at or near decadal highs following a significant increase through 2021-2023. The UK was one of the earliest adopters of inflation-indexed bonds, and so already has a long timeseries of *ex ante* (traded) real rates, dating back to the early 1980s. We use this time series to backcast real yields, drawing on an approach by the NY Fed that we have previously employed for the US. This backcast of real rates helps us interpret how real yields are currently trading amid ongoing elevated inflation.

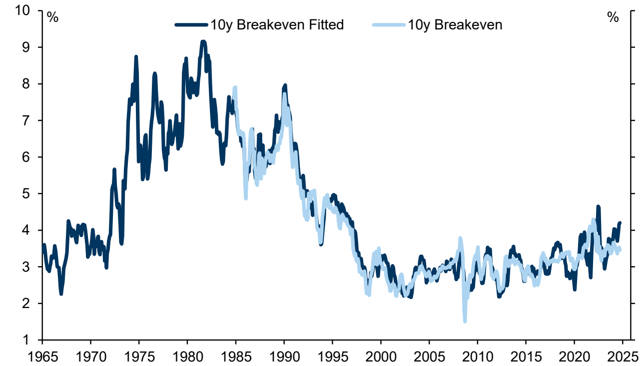
To estimate the earlier history of real yields, we use a partial least squares (PLS) regression of traded real rates on a large set of macro variables from 1985 to today from the BoE's Millennium dataset. Once these real rates are calculated, we use the historical data of nominal Gilt yields to compute breakeven inflation estimates. The full method, including input variables, is described in the Appendix.

Exhibit 1: Real rates rose rapidly in response to the oil shocks and high inflation of the 1970s
10y Inflation-Indexed Bond Yields, Actual vs Fitted



Source: Goldman Sachs Global Investment Research, Haver Analytics

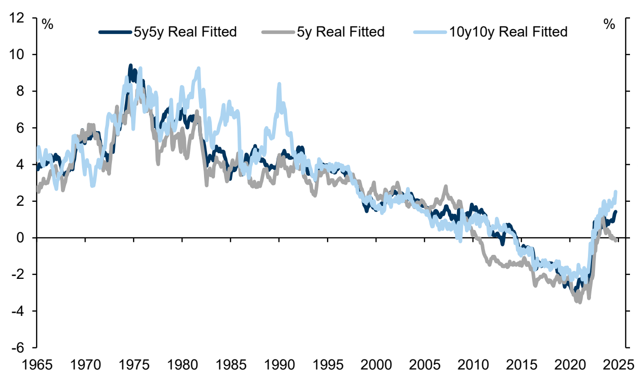
Exhibit 2: Breakeven Inflation embedded higher inflation expectations and risk premia after the oil shocks
10y Breakeven Inflation, Actual vs Fitted



Source: Goldman Sachs Global Investment Research, Haver Analytics

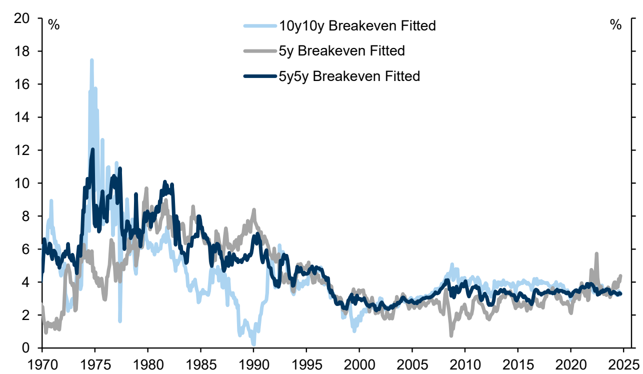
We estimate that *ex ante* (traded) real yields rose rapidly, together with breakevens, after the first oil shock in 1973 and remained elevated for more than a decade (Exhibit 1 & Exhibit 2). Real rates, similar to nominal rates, remained very volatile throughout the 1970s, partially due to rapidly shifting inflation expectations. From the early 1980s onwards – coinciding with the introduction of Linkers and all-time-high Bank Rate – inflation expectations dropped and ushered in a secular decline of real yields over the following decades. In parallel, breakeven inflation dropped back to its previous levels that had persisted, according to our estimates, before the inflation shocks. Other institutional advancements at the time, such as inflation targeting (1992) and monetary independence (in 1997), helped further anchor breakevens, and supported lower real rates.

Exhibit 3: Real rates initially rose in parallel across the curve in the 1970s
Inflation-Indexed Bond Yields, Fitted



Source: Goldman Sachs Global Investment Research

Exhibit 4: Inflation expectations remained elevated until the 1980s-90s
Breakeven Inflation, Fitted

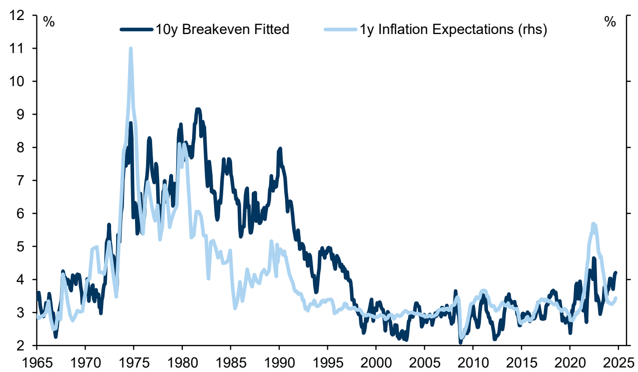


Source: Goldman Sachs Global Investment Research, Haver Analytics

To understand the shifting pattern of real rates during the 1970s, we look at the term structure of inflation and breakevens from our estimates. Our estimates suggest that the rise in real rates was roughly parallel across the curve (Exhibit 3). In contrast, the breakeven curve steepened significantly, with long-end breakevens rising by more than the 5y or 10y (Exhibit 4). Intuitively, investors demand to be compensated for higher inflation uncertainty through inflation risk premia, i.e., the difference between inflation compensation and inflation expectations. While our modelling framework for inflation risk premia doesn't extend back to that period due to lack of data (estimates require the full term structure of inflation pricing), surveys generally suggest that investors do not have particularly differentiated expectations between 5y and longer-dated forwards of inflation. Thus, the curve shape should provide a reasonably good gauge of inflation risk premia. The steepening of the breakeven curve suggests a meaningful increase in inflation risk premium in the 1970s. This is consistent with the rise in breakeven inflation alongside short-term inflation expectations (Exhibit 5). It then took much of the 1980s for inflation expectations to catch down to short-term inflation expectations, a process we can see in the flattening of the breakeven term structure over that period.

Exhibit 5: Breakevens increased with short-run inflation expectations

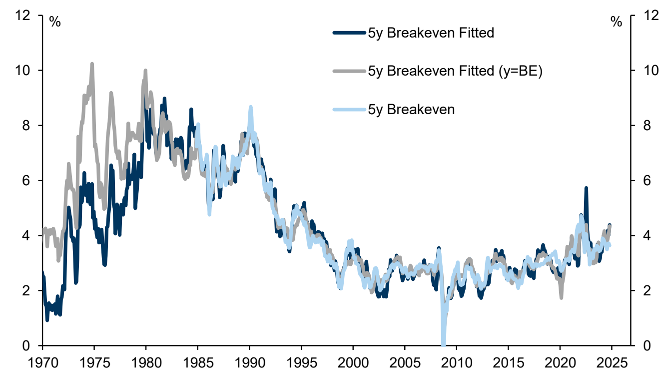
10y Breakeven Inflation, Fitted vs 1y Ahead Inflation Expectations



Source: Goldman Sachs Global Investment Research, Bank of England

Exhibit 6: Estimating breakevens (rather than real rates) gives even higher inflation values

5y Breakeven Inflation, Actual vs Fitted. Grey=Directly estimate Breakeven, Blue=estimate Real rate, Breakeven as difference to Nominal

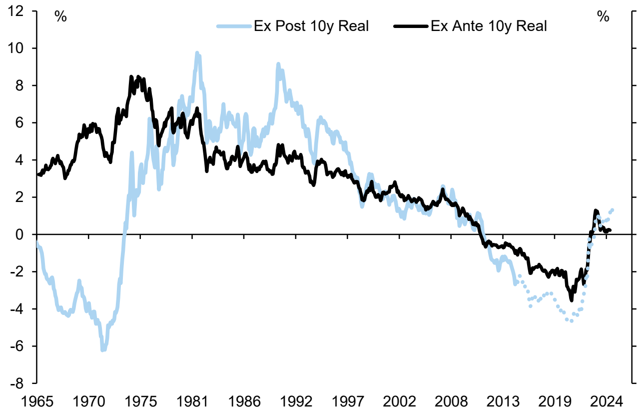


Source: Goldman Sachs Global Investment Research, Haver Analytics

The change in policy regime around inflation after 1980 (Volcker, Linker issuance, eventual central bank independence) creates a challenge for our model estimation. We are not estimating a structural model, in which the relationship between spot inflation and inflation / real rate pricing is governed by a policy rule, such as a Taylor Rule. But our estimation window occurs after 1980, a period in which inflation stabilisation and central bank independence (eventually) becomes the policy consensus. This will implicitly embed a particular relationship between real rates and inflation such that higher inflation is likely to skew real rates higher than in prior regimes where competing policy priorities (e.g., growth or employment) may have resulted in a weaker link between inflation and (front-end) real rates.

To check this possibility, we re-run our estimates with the same explanatory variables, but with breakeven inflation as the dependent variable (instead of the real rate). We find that our estimates for 10y inflation are basically identical, which gives us confidence in these benchmark estimates. But for 5y breakevens, we find that inflation is estimated to be much higher in the 1970s than the implied breakeven from the prior exercise of estimating real rates (Exhibit 6). This suggests that the post-1980 estimates may embed too strong a relationship between front-end real rates and inflation levels, and that in fact front-end real rates in the 1970s were likely lower, and the real curve steeper than the original estimates imply.

Exhibit 7: Following the high inflation of the 1970s, nominal Gilts outperformed Inflation-Indexed Yields in real terms
10y Nominal Gilts - 10y Realized Inflation (Ex-Post) vs 10y Fitted Real Yields (Ex-Ante). Dotted=Realized Inflation using Forward

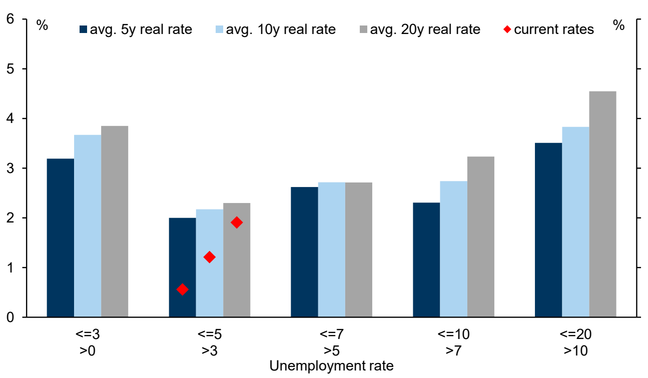


Source: Goldman Sachs Global Investment Research, Haver Analytics

Lessons for the current period —– real rate curve too steep

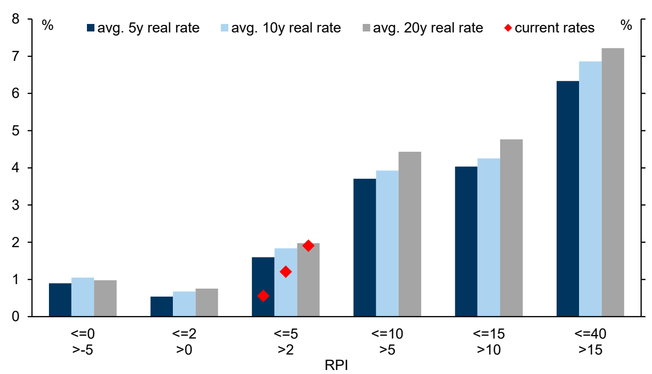
Comparing *ex-ante* and *ex-post* real rates, we find – unsurprisingly – that the inflation shock of the 1970s led to deeply negative real returns to hold-to-maturity long nominal Gilt positions. However, the rise in real rates into the 1980s, alongside disinflationary policies, ushered in a period of substantial increases in *ex-post* real returns. This exercise shows that the high-inflation experience of the 1970s led investors to overprice inflation risk: throughout the 1980s ex-ante real yields were consistently below ex-post yields, implying that investors would have been better off owning nominal bonds and bearing the inflation risk (Exhibit 7). This led to significant interest expense savings for the UK DMO, which captured that premium through Linker issuance.

Exhibit 8: Current real rates curve steep vs history
Average Real Rate (Fitted) across different unemployment regimes



Source: Goldman Sachs Global Investment Research, Haver Analytics

Exhibit 9: Although real rate levels broadly consistent with inflation
Average Real Rate (Fitted) across different inflation regimes



Source: Goldman Sachs Global Investment Research, Haver Analytics

Given the recent rise in real rates (and the likely deeply negative real returns to long Gilt positions in recent years), we could ask whether we will see a similar period of *ex-post* real gains from current longs. Our estimates suggest that the current levels of real rates, especially at the front end, are not excessive, despite the recent rise. Instead, benchmarking real rates against inflation and unemployment, current levels of rates are consistent with the macro environment (Exhibit 8 & Exhibit 9). In addition, the relatively flat inflation breakeven curve (even controlling for the likely adjustment of RPI towards the lower CPI embedded in long-end RPI forwards) suggests that inflation risk premium is well-contained in the UK curve. This does imply that the steepness in the real rate curve will eventually fade, with 30y reals outperforming vs the front end, and raises the hurdle for nominal Gilts to outperform Linkers over long holding periods.

The authors would like to thank Loïc Mathys for his contribution to this report. Loïc is an intern in the Markets team.

Appendix

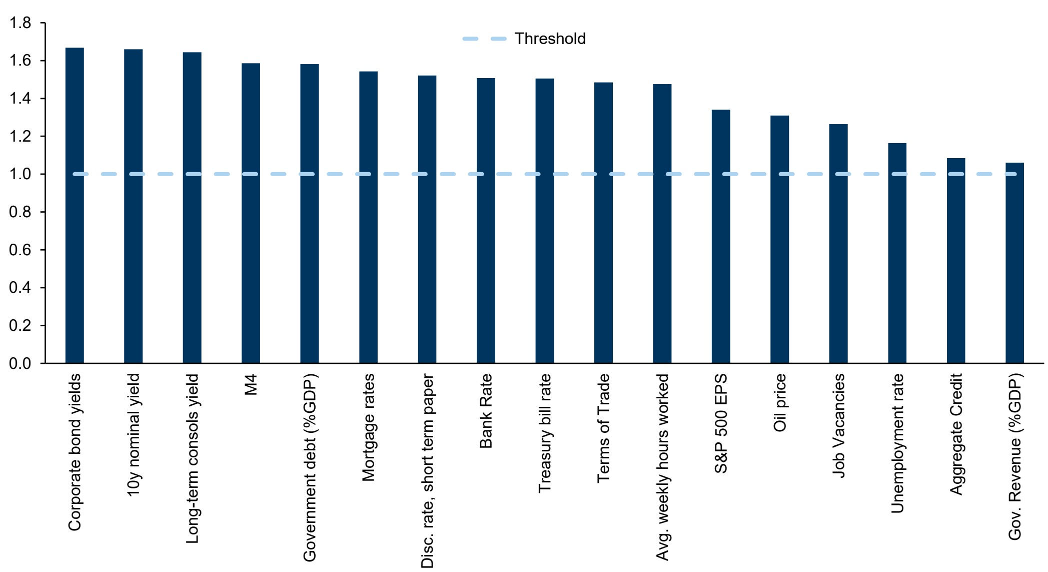
Leveraging the Bank of England's Millennium of Macroeconomic Data dataset, which provides ultra-long time series of relevant macro variables, we estimate the long-term history of UK real yields (5y, 10y and 20y) and their corresponding breakeven rates. This allows us to backcast yields and breakevens as far back as the 1960s.

We apply a backcasting methodology following an approach by the NY Fed and our US colleagues, using Partial Least Squares (PLS) regression to mitigate multicollinearity and reduce dimensionality.

Using a ranking algorithm called Variable Importance for PLS (VIP) (Mehmood et al. (2012)), we can measure the importance of each variable's contribution – intuitively, corporate bond and nominal Gilt yields rank highly, as do monetary variables and measures of the fiscal stance.

Exhibit 10: Nominal yields, money supply, fiscal variables and labour market data most useful to backcast real yields

Scores > 1 suggest variable provides useful information for estimates



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