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Market Strategy
J.P. Morgan Securities Ltd.
London, August 2, 2007

A simple rule to trade the curve

- **The strategy: invest in flatteners when central banks tighten and steepeners when central banks ease, look for carry when policy rates are on hold**
- **Over the past 20 years, the curve strategy applied in 2s10s produced decent information ratios of between 0.5 and 0.8 in USTs, Bunds, UK Gilts and JGBs**
- **Combining the 2s10s curve strategy in all four markets benefits from diversification**
- **The strategy performance exhibits modest directionality, i.e. it performs better in bull markets, but less so in JGBs and Bunds**
- **Current strategy: be in 2s10s flatteners in the US for carry and also in 2s10s flatteners in the Euro area, UK and Japan on monetary policy momentum**

INVESTMENT STRATEGIES: NO. 34

Movements in yield curves are closely linked to monetary policy cycles. Indeed Charts 1A to 1D show that yield curves tend to flatten when central banks tighten monetary policy and steepen when they ease. Can we exploit this link to trade the curve? The answer is yes. A simple rule that enters into a flattener when central banks tighten and into a steepener when central banks ease, has worked well over the past 20 years in four major bond markets, USTs, Bunds, UK Gilts and JGBs. When the central bank is on hold, i.e. the signal is neutral, the strategy enters into a flattener or a steepener depending on which one has positive carry.

As shown in our previous research, *Exploiting carry with cross-market and curve bond trades*, Jan 07, N. Panigirtzoglou, trading the curve based on carry only has worked well when rotating between markets, but not within one market. Chart 1 shows that a carry trading rule performed well in Japan, but not in the US or Euros, where monetary policy has exhibited more regular cycles than in Japan. In this note, by complementing carry with monetary policy momentum, we are able to achieve good performance in all four major bond markets.

Why does the strategy work? The strategy exploits the systematic underprediction of central bank moves (Chart 2, see also *Central bank communication hits diminishing marginal returns,* May 07, D. Mackie and G. Cooper). This underprediction creates momentum in monetary policy expectations resulting in sustained flattening or steepening of the yield curve (Charts 1A to 1D). Admittedly, a flattening position during tightening cycles and a steepening position during easing cycles has negative carry, but this is more than offset by the momentum in yield curve movements.

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The certifying analyst is indicated by an [AC]. See page 7 for analyst certification and important legal and regulatory disclosures.

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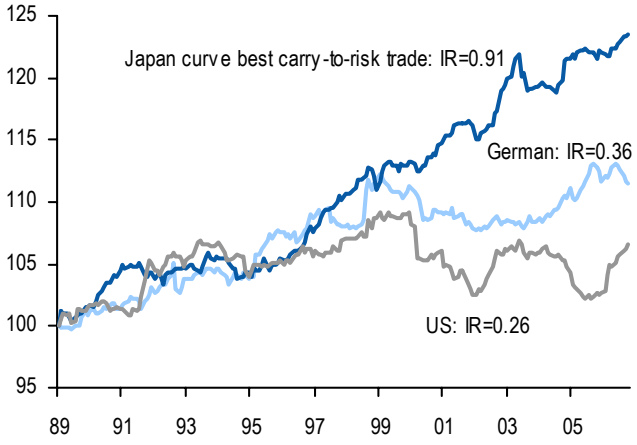
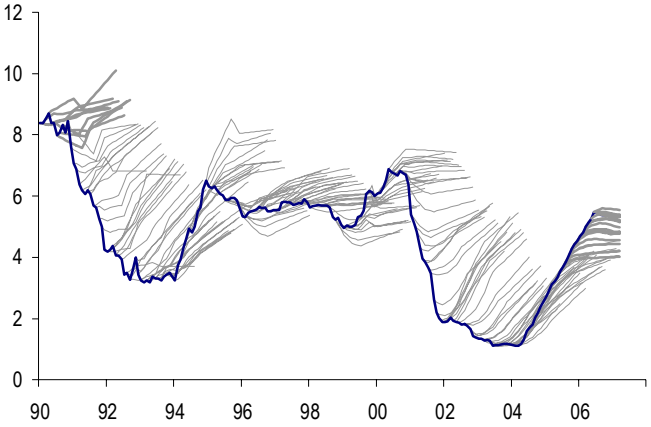
Chart 1: Performance of carry trades in curves
return index of the strategy that invests in the best carry-to-risk curve trade within one market with monthly rebalancing since 1989



Source: JPMorgan

Chart 2: USD rate realizations vs expectations
3-month LIBOR forwards



Source: JPMorgan

To evaluate the historical performance of the strategy we look at three curve trades (2s10s, 2s5s and 5s10s) in both bonds and swaps for the US, Germany, UK and Japan. Daily data are used since 1987 for bonds and since 1990 for swaps, apart from JPY swaps where return indices are only available since 1996. The strategy is always invested in either a flattener or steepener depending on whether the change in the central bank policy rate over a specified period in the past (i.e. lookback period) is positive or negative. When the policy rate is unchanged, the strategy invests in either a flattener or steepener depending on carry[1].

In implementing the strategy we examined different lookback periods, i.e. different lengths of the historical period over which momentum in the central bank policy rate is calculated. Charts 3A to 3D show the information ratio (IR) for the 2s10s curve strategy in bonds and swaps across different lookback periods.

The strategy works best in the US. The IR peaks at a level of 0.91 for bonds at a lookback period of 240 calendar days (approximately 8 months) but the performance is also robust across a wide range of lookback period lengths. Similarly, in the case of Bunds and Euro swaps, the performance is good across lookback periods between 1-6 months. In the case of Japan and the UK the performance is also good but not across all lookback periods. In Japan the performance is good for lookback periods of 4 months or longer. For the UK, only short lookback periods of 1-2 months provide solid performance. This implies that in the case of Japan, where policy moves have been relatively sparse in the past, a long lookback period is essential to properly capture monetary policy momentum. In the case of the UK, where mini cycles have been more frequent than elsewhere, a short lookback period is needed to capture momentum.

The strategy worked well overall across all three types of curve trades, i.e. 2s10s, 2s5s and 5s10s. Nevertheless, the performance was somewhat better for 2s10s in the US, 2s5s in Germany and the UK and 5s10s in Japan (Charts 4A to 4D).

How stable is the performance? Charts 5A to 5D show the rolling 12-month return of the strategy in 2s10s. The gains were significant between 5-10% for periods when central bank action led to big moves in the slope of the yield curve, but were much more modest in periods of unchanged policy rates, as only carry is being earned. The instances of a negative annual return are relatively scarce, and the strategy tends to rebound quickly after that.

How directional is the strategy? Charts 6A to 6D show that the strategy performed better in bull markets, but directionality has been minor in the case of Japan. Looking at charts 5A to 5B, the big spikes in performance occurred during easing cycles when the curve steepened (i.e. in 1989-93 and 2001-2002 in the US, in 1989-1990, 1998 and 2001 in the UK and in 1994-95 in Germany). So although monetary policy and curve momentum has worked well in both tightening and easing cycles, it has been more intense in easing cycles producing outlier positive returns.

Is there diversification to be gained by combining the curve strategy in all four markets? The answer is yes. Combining the 2s10s curve strategies in all four bond markets since 1987 produced an IR of 1.15. Combining the 2s10s curve strategies in all four swap markets since 1996 produced an IR of 1.36.

1. The curve trades are duration-weighted with fixed weights of 4:1 for 2s10s, 2:1 for 2s5s and 2:1 for 5s10s.

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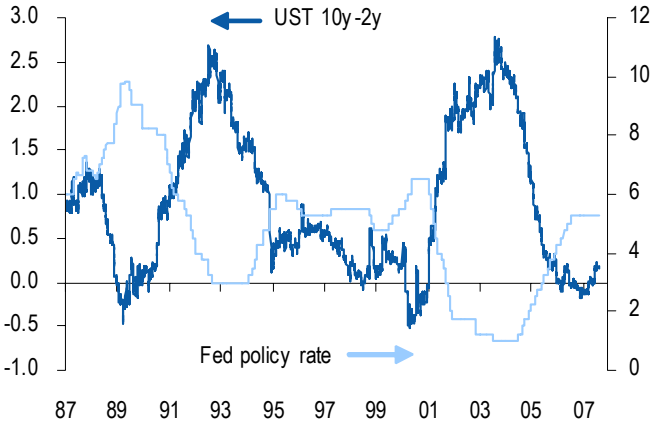
Chart 1A: UST curve and Fed funds target rate

in %



Source: JPMorgan

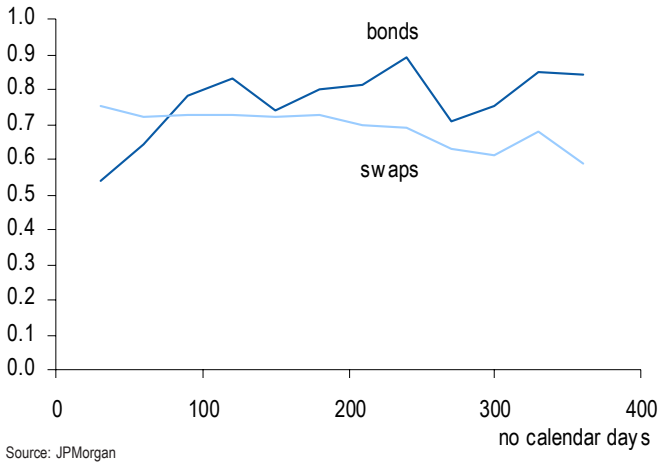
Chart 2A: Excess return index of the 2s10s strategy

excess return index over cash of the UST strategy that uses a rolling period of 240 calendar days for the change in the Fed funds rate

Source: JPMorgan

Chart 3A: IR of the 2s10s strategy across different lookback periods

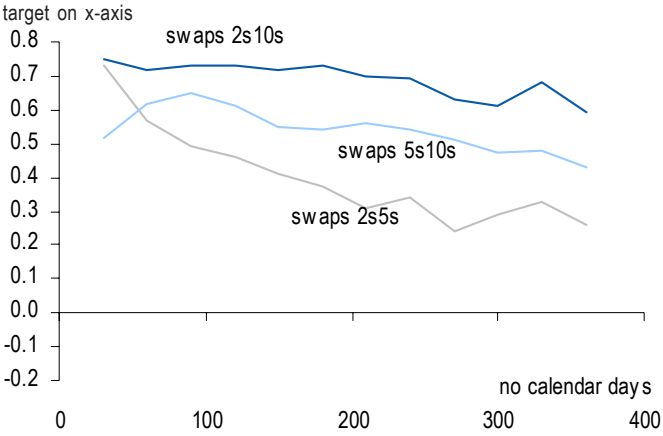
IR on y-axis, lookback period in calendar days for the change in Fed funds target on x-axis



Source: JPMorgan

Chart 4A: IR of the strategy across different lookback periods

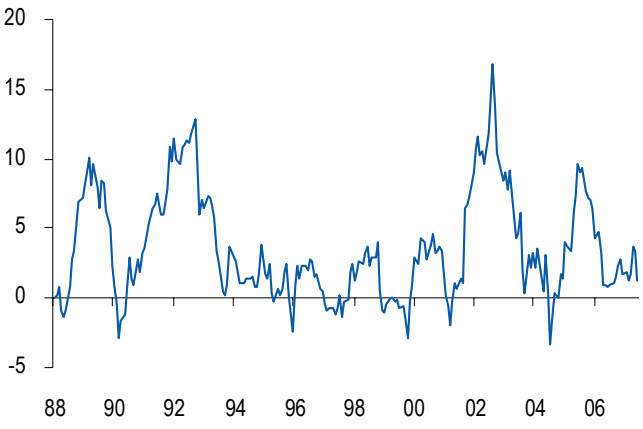
IR on y-axis, lookback period in calendar days for the change in Fed funds target on x-axis



Source: JPMorgan

Chart 5A: Rolling 12-month return of the 2s10s UST strategy

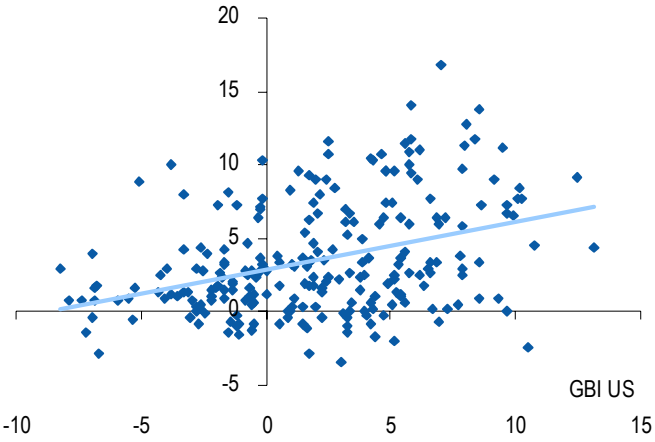
UST strategy that uses a rolling period of 240 calendar days for the change in the Fed funds rate, y-axis shows 12-month returns in %



Source: JPMorgan

Chart 6A: Directionality of the 2s10s UST strategy vs GBI US

y-axis shows 12-month returns in % for the UST strategy that uses a rolling period of 240 calendar days for the change in the Fed funds rate, x-axis shows 12-month excess returns over cash of GBI US



Source: JPMorgan

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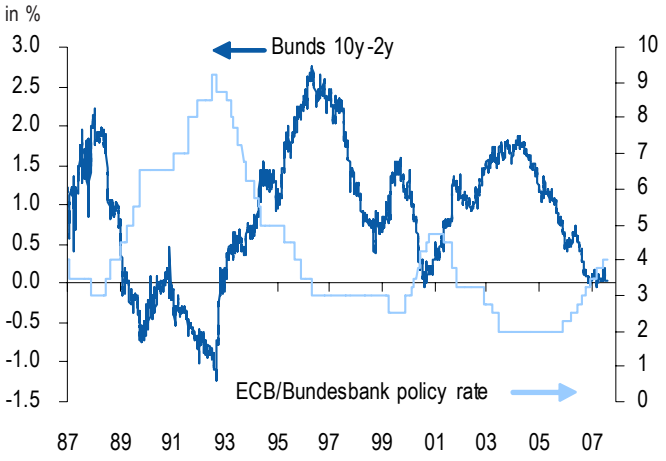
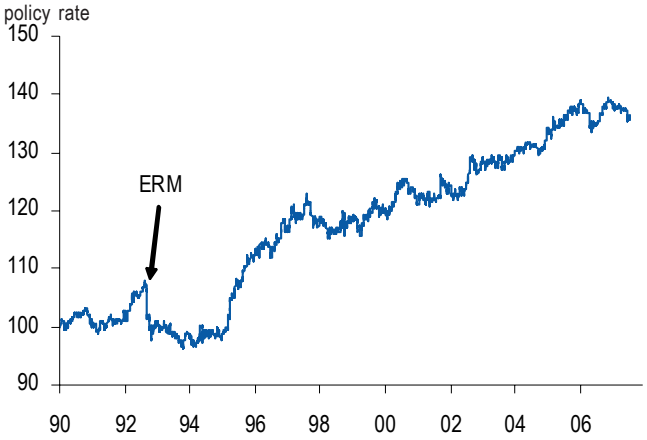
Chart 1B: Bund curve and ECB/Bundesbank policy rate



Source: JPMorgan

Chart 2B: Excess return index of the 2s10s strategy in euro swaps

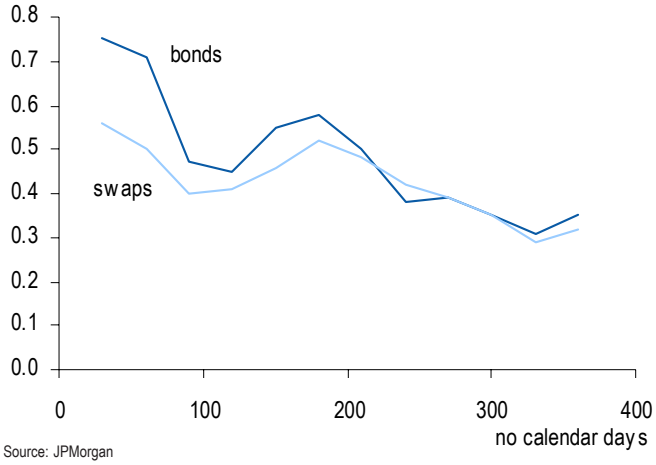
excess return index over cash of the 2s10s euro swap strategy that uses a rolling period of 180 calendar days for the change in the ECB/Bundesbank policy rate



Source: JPMorgan

Chart 3B: IR of the 2s10s strategy across different lookback periods

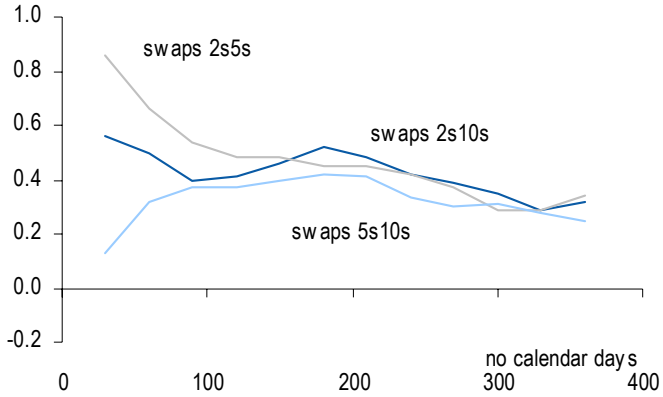
IR on y-axis, lookback period in calendar days for the change in ECB/ Bundesbank policy rate on x-axis



Source: JPMorgan

Chart 4B: IR of the strategy across different lookback periods

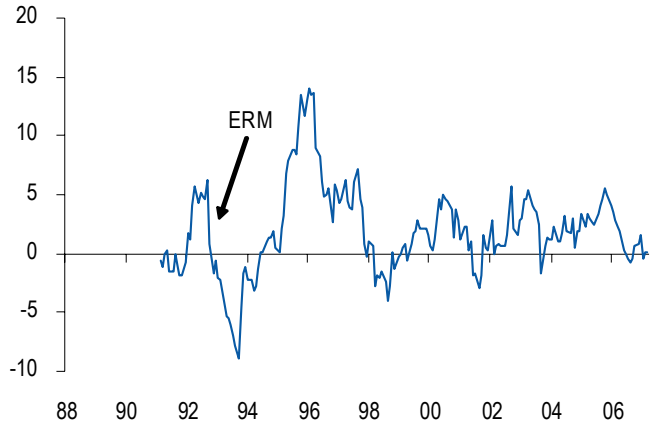
IR on y-axis, lookback period in calendar days for the change in ECB/ Bundesbank policy rate on x-axis



Source: JPMorgan

Chart 5B: Rolling 12-month return of the 2s10s euro swaps strategy

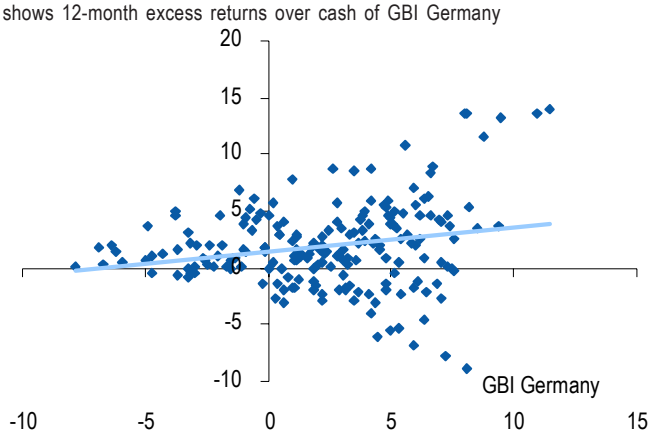
euro swap strategy that uses a rolling period of 180 calendar days for the change in the ECB/Bundesbank policy rate, y-axis shows annual return in %



Source: JPMorgan

Chart 6B: Directionality of the 2s10s swap strategy vs GBI Germany

y-axis shows 12-month returns in % for the euro swap strategy that uses a rolling period of 180 calendar days for the change in the policy rate, x-axis shows 12-month excess returns over cash of GBI Germany



Source: JPMorgan

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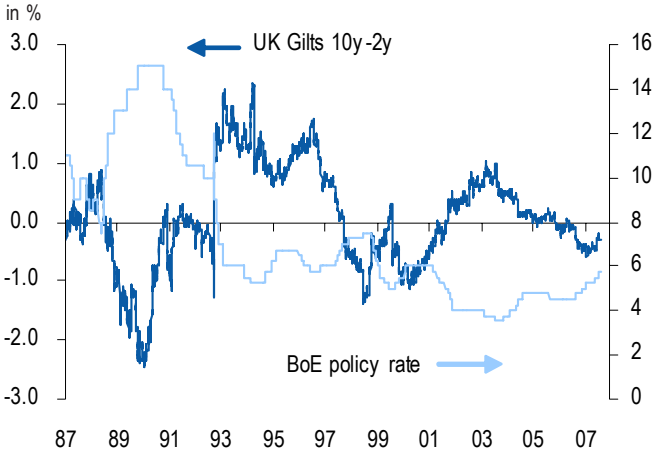
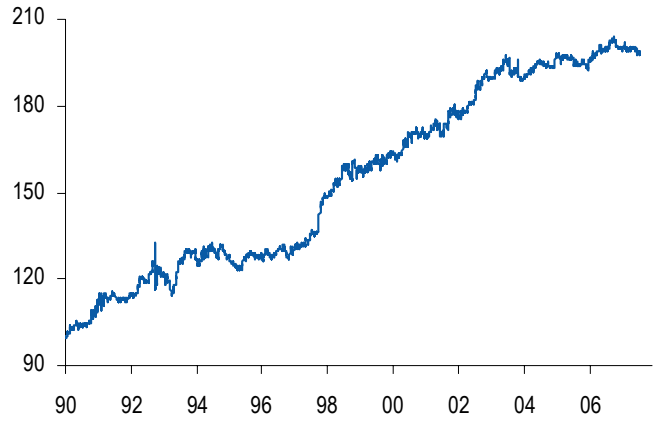
Chart 1C: UK Gilt curve and BoE policy rate



Source: JPMorgan

Chart 2C: Excess return index of the 2s10s strategy in UK swaps

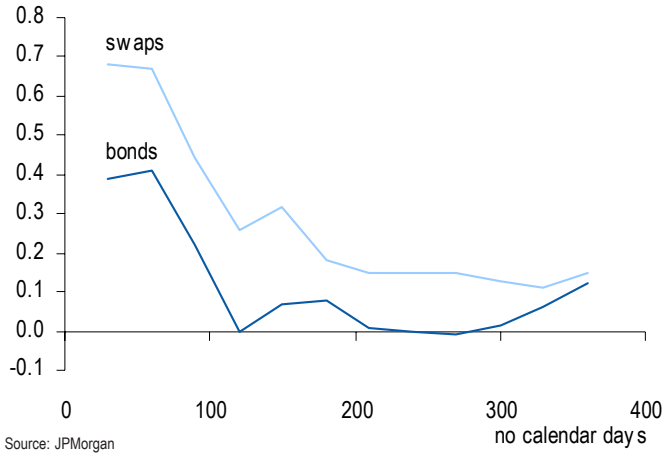
excess return index over cash of the UK swap strategy that uses a rolling period of 60 calendar days for the change in the BoE policy rate



Source: JPMorgan

Chart 3C: IR of the 2s10s strategy across different lookback periods

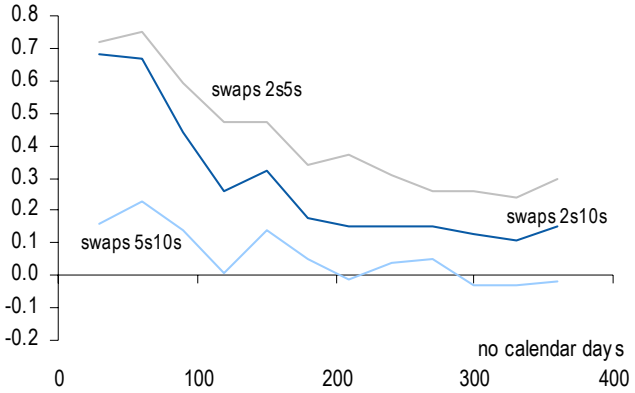
IR on y-axis, lookback period in calendar days for the change in BoE policy rate on x-axis



Source: JPMorgan

Chart 4C: IR of the strategy across different lookback periods

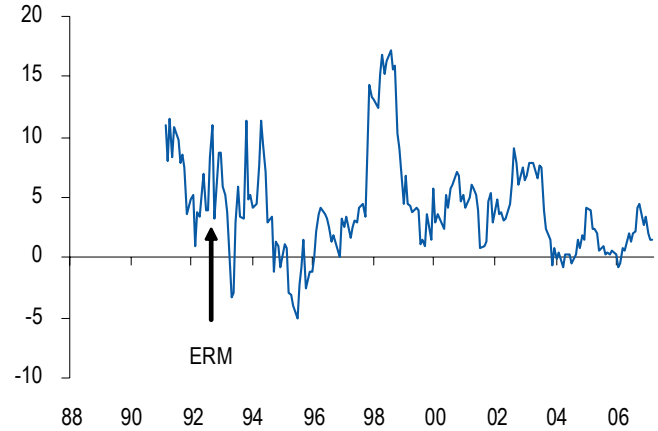
IR on y-axis, lookback period in calendar days for the change in BoE policy rate on x-axis



Source: JPMorgan

Chart 5C: Rolling 12-month return of the 2s10s UK swaps strategy

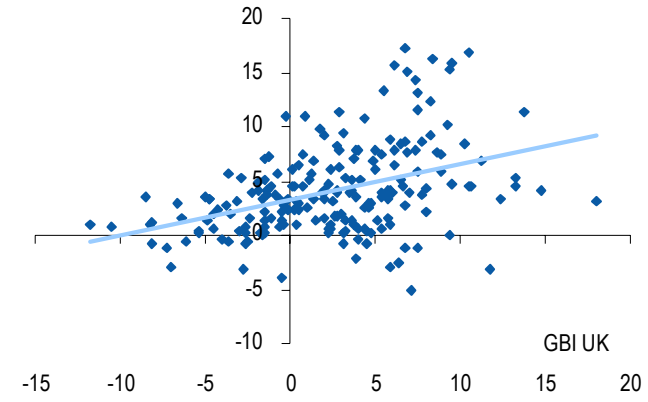
UK swap strategy that uses a rolling period of 60 calendar days for the change in the BoE policy rate, y-axis shows annual return in %



Source: JPMorgan

Chart 6C: Directionality of the 2s10s UK swap strategy vs GBI UK

y-axis shows 12-month returns in % for the UK swap strategy that uses a rolling period of 60 calendar days for the change in the policy rate, x-axis shows 12-month excess returns over cash of GBI UK



Source: JPMorgan

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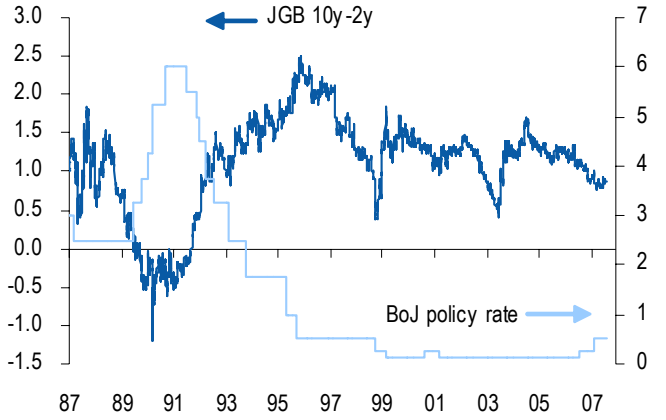
Chart 1D: JGB curve and BoJ policy rate

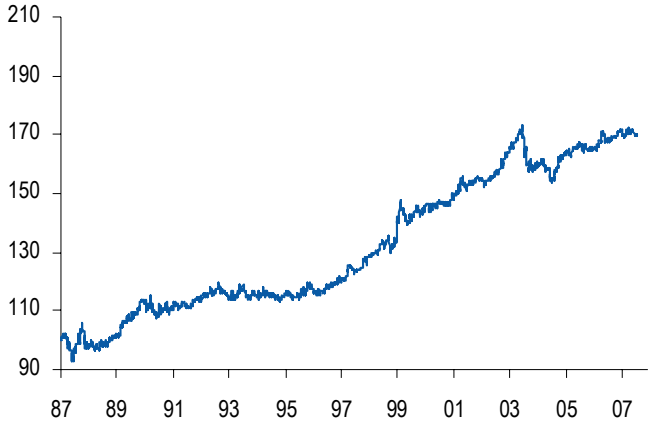
in %



Source: JPMorgan

Chart 2D: Excess return index of the 2s10s strategy in JGBs

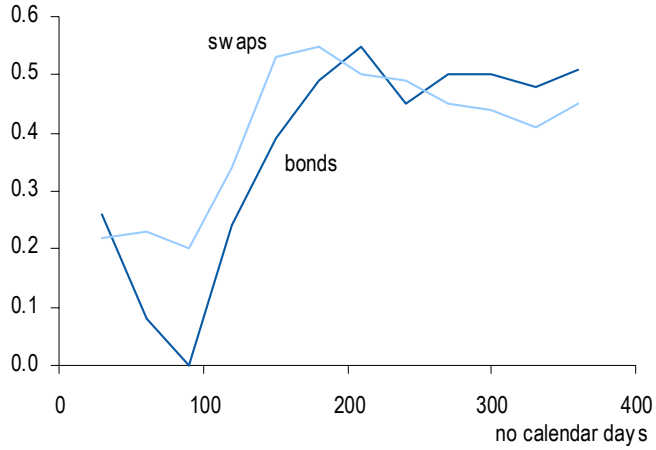
excess return index over cash of the JGB curve strategy that uses a rolling period of 210 calendar days for the change in the BoJ policy rate



Source: JPMorgan

Chart 3D: IR of the 2s10s strategy across different lookback periods

IR on y-axis, lookback period in calendar days for the change in BoJ policy rate on x-axis



Source: JPMorgan

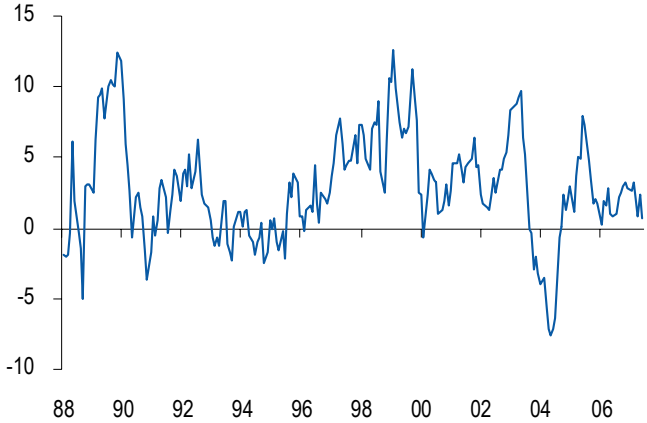
Chart 4D: IR of the strategy across different lookback periods

IR on y-axis, lookback period in calendar days for the change in BoJ policy rate on x-axis

Source: JPMorgan

Chart 5D: Rolling 12-month return of the 2s10s JGB curve strategy

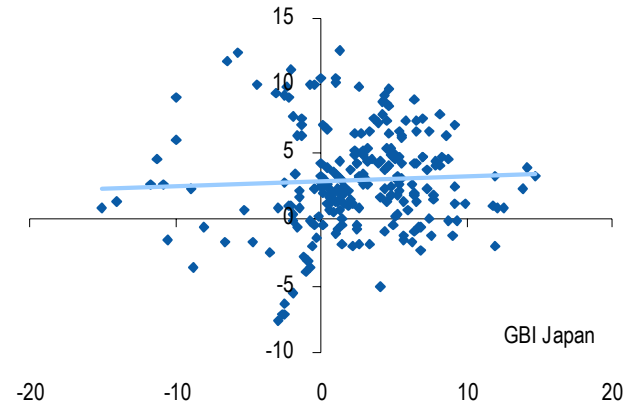
JGB curve strategy that uses a rolling period of 210 calendar days for the change in the BoJ policy rate, y-axis shows annual return in %



Source: JPMorgan

Chart 6D: Directionality of the 2s10s JGB curve strategy vs GBI Japan

y-axis shows 12-month returns in % for the JGB swap strategy that uses a rolling period of 210 calendar days for the change in the policy rate, x-axis shows 12-month excess returns over cash of GBI Japan



Source: JPMorgan

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