Oil Analyst

Myopic Bulls and Long-Sighted Bears

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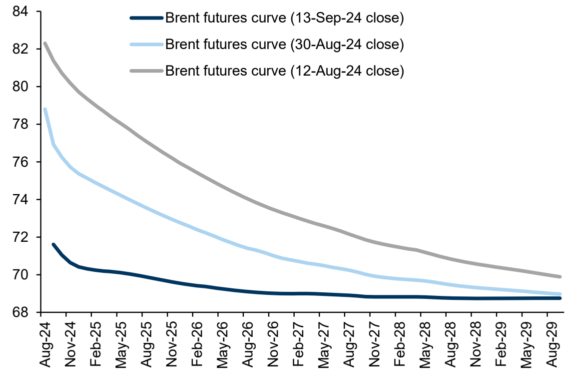
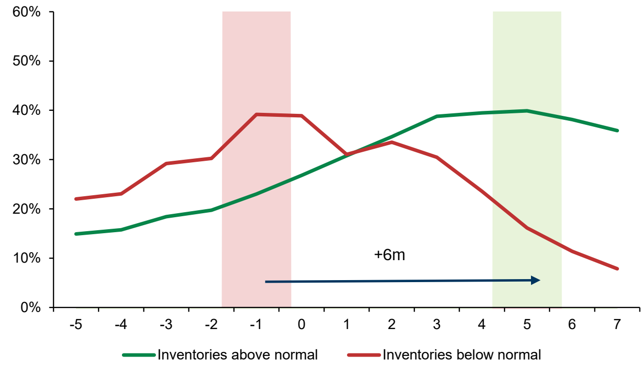
- Oil prices sold off $10/bbl over the past month, initially driven by lower long-dated prices, consistent with US shale volume beats in 2Q24 earnings. However, weaker timespreads have driven the September selloff, and now look $9/bbl undervalued, with positioning at historical lows.
- We estimate that the market has downgraded demand expectations by nearly 1mb/d over the next six months, consistent with a 1pp downgrade to global growth, or a 25pp increase in recession probability. This reassessment of growth downside is larger in the oil market than the equity market (which still prices robust growth), the bond market (where recession probability has risen ~15pp), or for our US economists, who have nudged up their 12-month recession probability by 5pp over the past two months.
- The relatively larger impact of the growth downgrade on oil prices appears surprising at first sight because we have shown that commodities are mostly spot assets in contrast to more anticipatory equities and bonds. However, one plausible explanation is that the oil market has become more forward-looking, and already prices a large 2025 surplus.
- In general, we find that oil prices are about two quarters more forward-looking when inventories are above average than when inventories are low. When inventories are low, future supply cannot be made available today, and prices have to reflect the risk of near-term stockouts, and thus spot inventories. In contrast, when inventories are comfortable, today's inventories can be stored to absorb future tightening shocks, linking prices across time, and allowing prices to reflect expected inventory levels over a somewhat longer horizon.
- Our analysis supports our base case that Brent recovers to $77/bbl in 2024Q4 as excessively pessimistic demand concerns abate, positioning and valuation recover, and OECD inventories remain somewhat below normal. Our findings, however, also highlight the risk that relatively comfortable inventory levels allow the market to already price in the expected 2025 surplus, which would hinder the recovery in valuation. If the present undervaluation were to sustain at the 25th percentile of history, this would leave Brent in 2024Q4 at $72/bbl or $5 below our base case.

The Brent forward curve has lost almost all of its backwardation
Brent forward curves (USD/bbl)



Source: ICE, Goldman Sachs Global Investment Research

Crude oil prices become c.6m more forward looking when inventories are above normal
R-sq of current Brent (1m-36m) timespreads to normalised OECD inventories X months ahead



Shaded region represents peak R-sq

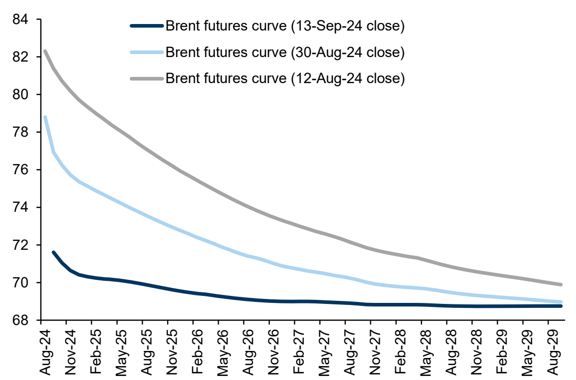
Source: IEA, Goldman Sachs Global Investment Research

Myopic Bulls and Long-Sighted Bears

Crude oil prices sold off $10/bbl over the past month. Initially, the sell-off was led by long-dated oil prices, consistent with robust volumes in the 2Q24 earnings season for US oil producers. Ongoing efficiency gains and benefits from consolidation are reducing well costs for US shale, which remains the marginal producer.

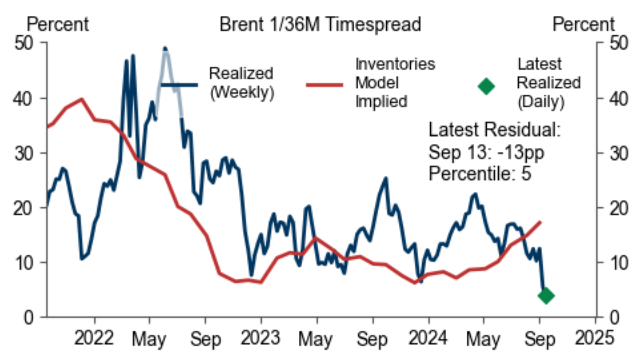
By contrast, weaker timespreads have driven the September sell-off (Exhibit 1), which reflect a bearish reassessment of forward supply-demand balances. Brent crude oil timespreads now look $9/bbl undervalued on our modeling given our OECD oil inventory nowcast. This undervaluation registers in the 5th percentile of history, with positioning at historical lows (Exhibit 2).

Exhibit 1: The Brent forward curve has lost essentially all of its backwardation
Brent forward curves (USD/bbl)



Source: ICE, Goldman Sachs Global Investment Research

Exhibit 2: The Gap Between the Brent 1/36M Timespread and Its Inventory-Implied Fair Value Decreased to the Lowest Decile
Brent 1/36m timespread model



Source: IEA, CME, Goldman Sachs Global Investment Research

The Oil Market Has Turned More Pessimistic on Demand Than Other Macro Markets

As OPEC+ recently extended their voluntary cuts, we assume that the downgrade of oil demand fully explains the repricing of crude oil timespreads over the past month, consistent with falling refining margins.[1]

Leveraging our inventory-based timespread model, we estimate that the market has downgraded oil demand expectations by nearly 1mb/d over the next six months, consistent with a 1pp downgrade to global growth, or a 25pp increase in recession probability.[2]

This repricing is much larger than in other markets and compared to resilient high frequency fundamental oil data. In the equity market, the recent rotation out of cyclical stocks into defensive stocks reflects a 0.5 pp cut to GDP growth expectations (Exhibit 3). Nevertheless, the equity market still prices robust sequential growth. We estimate

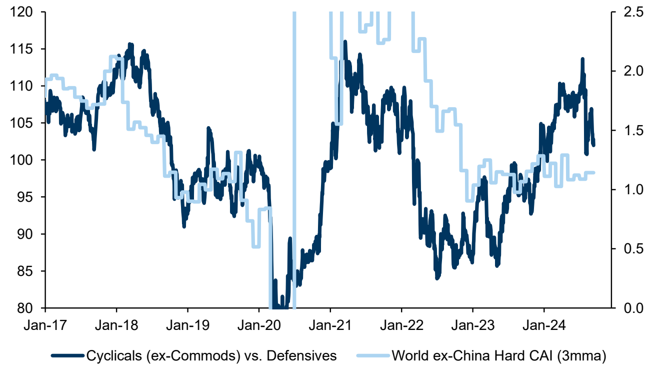
[1] In principle, perceived geopolitical downside risks to supply may have fallen too. That said, Libya supply has fallen and may stay lower for longer.

[2] We leverage our estimate of a peak $30/bbl hit to 2025 Brent prices in our moderate recession scenario.

that the bond-market implied probability of a recession in the next 12 months—proxied by probability of Dec-25 SOFR rates pricing below 2%—has risen by 15pp. (Exhibit 4).[3]

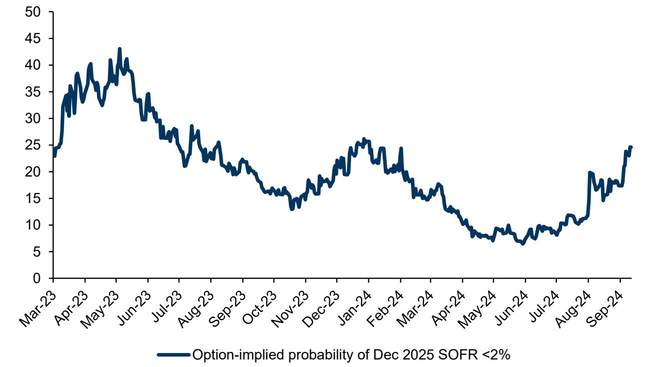
Meanwhile, our US economists' have only nudged up their 12-month ahead recession probability by 5pp over the past two months to 20%, and recently reiterated their view for a soft landing.

Exhibit 3: US equities have priced in a c.0.5 pp deceleration in global growth, but still reflect relatively robust growth
SP 500 Cyclicals/Defensives Index (LHS); GS World ex-China Hard Data Current Activity Indicator (%YoY growth, 3mma, RHS)



Source: Goldman Sachs Global Investment Research

Exhibit 4: The bond market has significantly adjusted its recession probability over the last 3 months
Option-implied probability of Dec-25 SOFR <2%



Source: Bloomberg, Goldman Sachs Global Investment Research

The Oil Market May Have Turned More Forward Looking

At first sight, the relatively larger impact of the growth downgrade in the oil market appears surprising because a common refrain in commodity markets is that they are 'spot assets'. Commodity markets should therefore be less sensitive to changes in future fundamentals than more anticipatory (longer duration) assets, such as bonds and equities, which reflect a discounted stream of future cash flows. We have historically found that oil markets are on average only modestly forward-looking.[4] We thus leverage a 1-4 month average of forward OECD inventories in our pricing framework, which typically best explains crude oil timespreads.[5]

However, one plausible explanation of the relatively large recent impact of the growth downgrade on the oil market is that the oil market has become more forward-looking and already prices a large 2025 surplus.

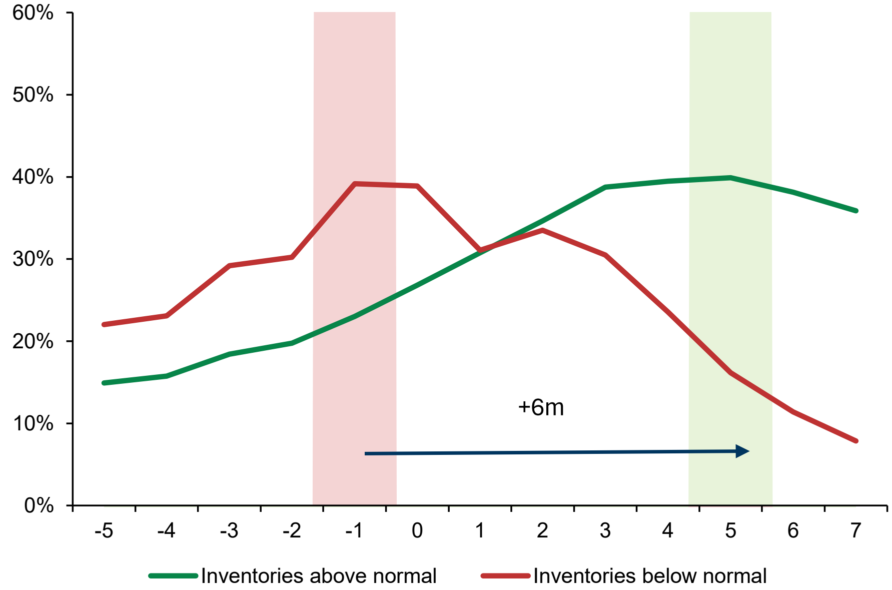
In general, we find that oil prices become more forward-looking when inventories are above normal than when inventories are below normal. The peak correlation between forward inventories and current timespreads shifts from almost contemporaneous when inventories are below normal, to a five-month lead time when inventories are above normal, corresponding to a two quarter forward shift in perspective (Exhibit 5).

[3] Slower core inflation has likely eased the constraints on significant interes rate cuts too.

[4] This is intuitive, given a barrel of crude oil bought today is likely for loading in two months, with often another month of travel time before offloading at a refinery destination. Crude oil purchasers are therefore always trying to optimize inventory several months forward.

[5] In reality the market is likely even more forward looking than this as the measurement error on forward inventories biases down the impact in regression models and reduces the Rsq.

Exhibit 5: Crude oil prices become 6m more forward looking in high inventory markets than low inventory markets
R-sq of current Brent (1m-36m) timespreads to normalised OECD inventories X months ahead



Shaded region represents peak R-sq

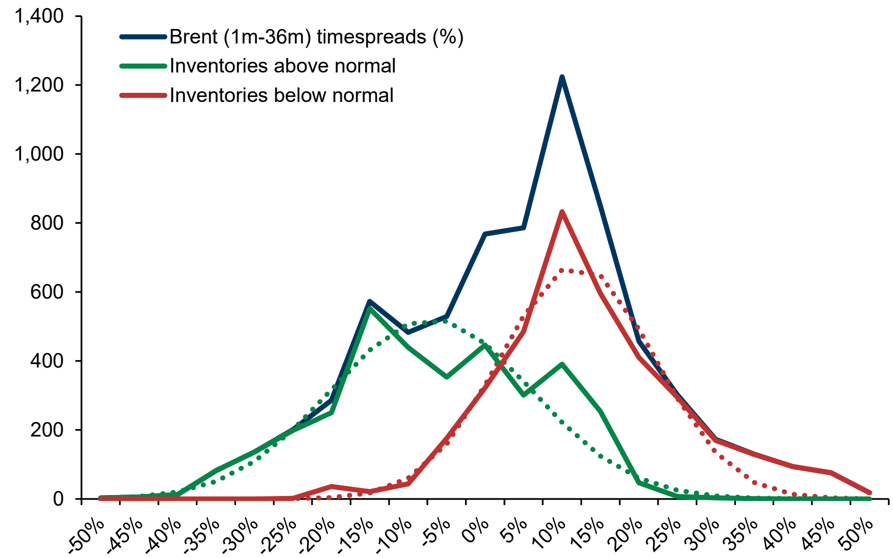
Source: IEA, Goldman Sachs Global Investment Research

We believe that this positive relationship between inventory levels and how much the oil market looks ahead reflects storage constraints that are unique to commodity markets. When inventory levels are low, future supply cannot be made available today, and prices have to reflect the risk of near-term stockouts, and thus spot inventory levels. In contrast, when inventory levels are comfortable, today's inventories can be stored to absorb future tightening shocks, allowing prices to reflect expected inventory levels over a somewhat longer horizon.

As a result, as the market pivots from low inventories to a period of sustained surplus, bringing inventories back above normal, the market-assessed probability of a stock-out in future periods can diminish significantly, and timespreads can rapidly lose their convenience yield. This is intuitive, as the main role of inventories is to shift supply over time, thereby linking prices in different periods, which is only possible when there is a surplus to redistribute.

The fairly bimodal distribution of Brent timespreads (Exhibit 6) also supports the notion that there are two pricing regimes: one for scarce inventories, and another one for abundant inventories. In fact, front-to-back (1/36m) timespreads in the low single digits are relatively underrepresented versus the low double-digit timespreads (both positive and negative).

Exhibit 6: Brent timespreads exhibit a relatively bimodal distribution, possibly reflecting two broader regimes: surpluses and deficits
Distribution of Brent (1m-36m) timespreads (count of days)



Distributions for the surplus and deficit regimes is solid for actual data, dashed for calibrated normal distribution

Source: ICE, Goldman Sachs Global Investment Research

What does our finding of two potential pricing regimes imply for oil prices today? Because inventory levels are now close to their historical average (which would imply timespreads close to their historical average if there were only one pricing regime), the market may experience two very different timespreads depending on which of the two pricing regimes the market operates in.

As we exit seasonal 3Q draws and as we expect to turn to a surplus from November, the market appears to have become more forward-looking, and is attempting to price much softer 2025 balances today. We estimate current market pricing is consistent with a surplus of more than 1mb/d next year, with OECD inventories moving above average.

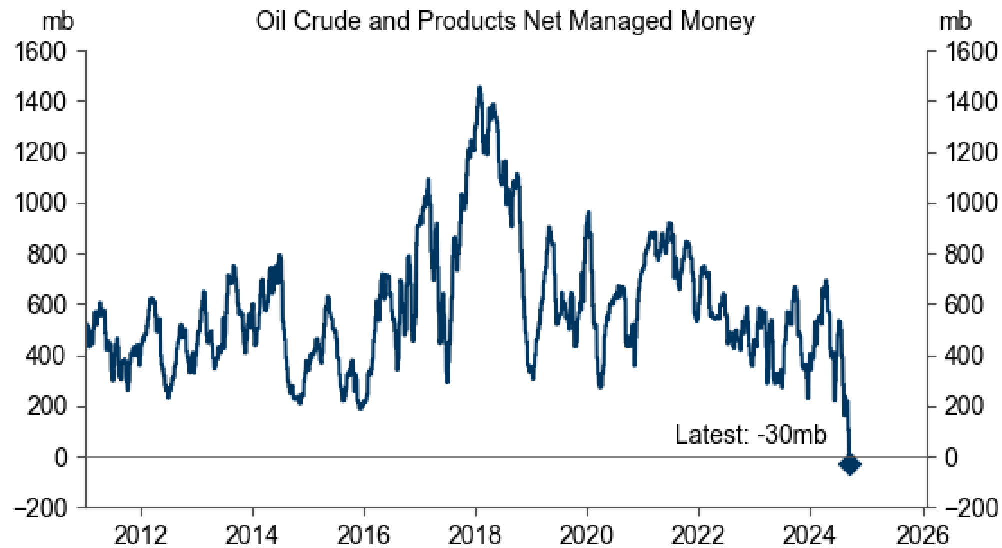
Myopic Bulls and Long-Sighted Bears

We see three implications from our analysis.

First, our finding that the oil market has turned much more pessimistic on demand than other macro markets and our economists supports our base case that Brent recovers somewhat further in the short-term, to a 2024Q4 average of $77/bbl, assisted by a recovery in positioning and valuation from very depressed levels (Exhibit 7). We remain more optimistic on global oil demand, especially outside of China, and expect excessively pessimistic demand concerns to abate. Although we forecast a surplus of 0.7 mb/d in 2025, we expect significant EM and SPR inventory builds to keep OECD inventories below normal. This is corroborated in current high frequency fundamental data, with our global oil inventory tracking sizeable draws of more than 1 mb/d over the past 8 weeks.

Second, our findings, however, also highlight the risk that relatively comfortable inventory levels allow the market to already price in the expected 2025 surplus, which would hinder the recovery in positioning and valuation. If the present undervaluation were to sustain at the 25th percentile of history, this would leave Brent in 2024Q4 at $72/bbl or $5 below our base case.

Exhibit 7: Oil speculative length has turned negative for the first time in its history
Total oil net speculative length (managed money, million barrels)

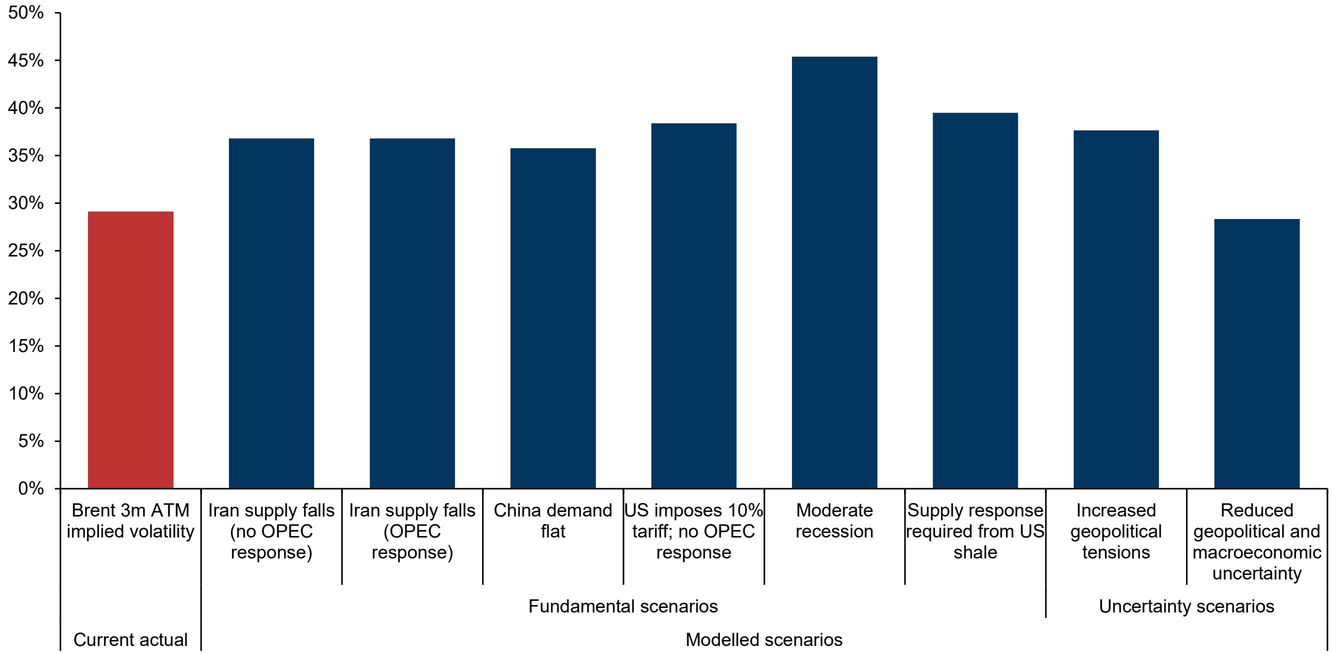


Source: CFTC, Goldman Sachs Global Investment Research

Third, these regime shifts in pricing can happen suddenly, causing price moves faster than what 'spot' fundamentals themselves would seemingly warrant[6], as the market suddenly becomes more forward-looking. As inventory-to-price relationships change suddenly, prices are likely to become more volatile too, even without the underlying fundamentals themselves exhibiting higher volatility. This reinforces our view that once the current oil volatility spike subsides, crude oil implied volatility is skewed higher thereafter.

6 Here we mean that the price move is larger than what a linear inventory to timespread relationship would imply.

Exhibit 8: Once the current growth concerns ease, we see risks to implied oil volatility as skewed to the upside
Brent 3m ATM implied volatility in different scenarios



Reduced geopolitical and macroeconomic uncertainty shifts US CAI and GPR factors to their mean and shifts the SPX IV factor to -1 standard deviation. Increased geopolitical tensions scenario leaves all variables unchanged, but increases the GPR factor to its Oct-23 to Jun-24 average. Recession factor assumes a 4 pp hit to US CAI from current levels, increases absolute stocks to 1 standard deviation from normal, and regresses the S&P 500 implied volatility factor on a 70% recession probability

Source: ICE, Goldman Sachs Global Investment Research

Disclosure Appendix

Reg AC

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