



Kevin Cousins

## Assessing risk in the energy sector

Kevin has over 30 years' experience in investment management. Kevin joined PSG Asset Management as an investment analyst in 2015. He was appointed as Head of Research in 2017.

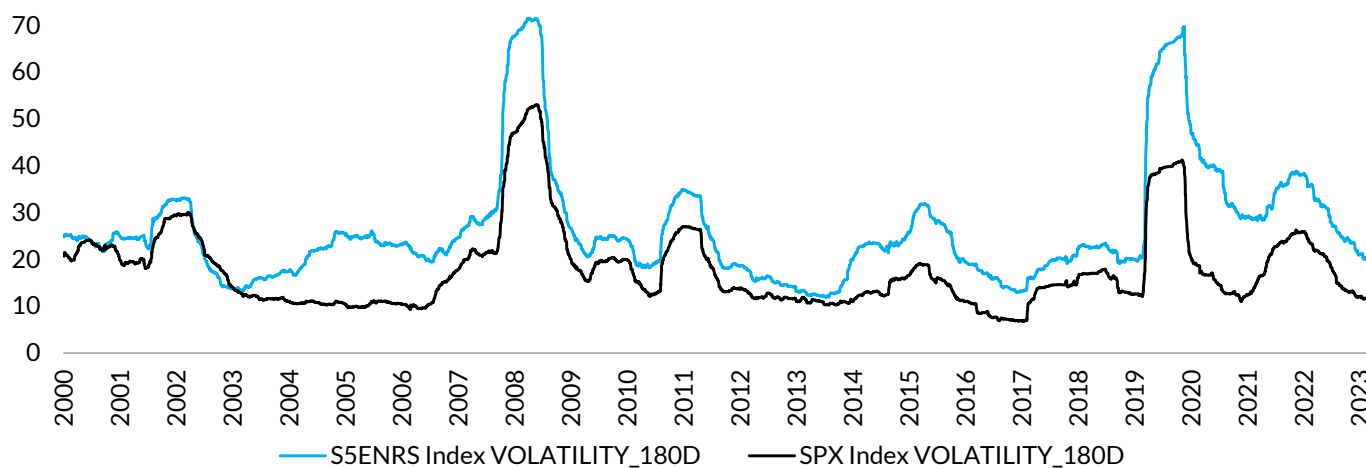
This is our latest article that continues with our conversations about risk and how the measurement instruments we use, ultimately influence the outcomes we achieve. Our previous articles linked to this topic can be found here: [Angles & Perspectives Q4 2023](#) and [PSG Angle March 2024](#).

Over the past 20 years, the adoption of quantitative risk measures and tools has been almost universal in finance. While they are easy to calculate and provide some interesting information, it is important to remember they are not measuring the true risks faced by an investor. We use the energy sector – traditionally viewed as high risk – to illustrate how we can use alternative views of risk to help prevent permanent capital loss on the one hand, and achieve required returns on the other.

### Price volatility is a poor guide to risk

Many investors shun the energy sector as it is perceived as being highly risky. The sector (as proxied by the S&P 500 Energy Index) certainly shows consistently higher volatility, with the historic volatility of returns averaging about 1.5x that displayed by the S&P 500 Index.

### Historic volatility of the S&P 500 Index and the S&P 500 Energy Index



Sources: PSG Asset Management and Bloomberg



A big energy position hence raises the spectre of a part of your portfolio declining dramatically in an equity risk-off event. But it's important to note that higher volatility of returns is not the same as correlated downside risk. For that, we need to examine performance during broader equity market drawdowns. We took any S&P 500 Index drawdowns of greater than 15% over the past 25 years and evaluated the downside risk.

### S&P 500 Energy Index total returns during S&P 500 drawdowns

| S&P 500 Drawdowns over past 30 years |       |         | Total Returns | Energy Out-/ |
|--------------------------------------|-------|---------|---------------|--------------|
| When                                 | Weeks | S&P 500 | S5ENRS Index  | (Under)perf  |
| 12/10/07 - 6/3/09                    | 74    | -55%    | -46%          | 9%           |
| 1/9/00 - 4/10/02                     | 110   | -46%    | -22%          | 24%          |
| 14/2/20 - 20/3/20                    | 6     | -32%    | -53%          | -21%         |
| 31/12/21 - 14/10/22                  | 42    | -24%    | 51%           | 75%          |
| 21/9/18 - 21/12/18                   | 14    | -17%    | -25%          | -8%          |
| 29/4/11 - 19/8/11                    | 17    | -17%    | -21%          | -4%          |
| 17/7/98 - 9/10/98                    | 13    | -17%    | -3%           | 14%          |
| 23/4/10 - 2/7/10                     | 11    | -16%    | -19%          | -4%          |

Bloomberg Total Return Weekly Data

Sources: PSG Asset Management and Bloomberg

The first point to note is that the Covid-19 drawdown in 2020 was the third worst drawdown, with the S&P 500 total return declining 32%. This was a unique situation – world oil demand collapsed and the market was forced to adapt to rapidly filling storage capacity. This depressed prices to such an extent that some oil contracts traded at negative prices (storage was so scarce that, in effect, the owner of the contract had to pay for someone to take the oil off their hands at expiry). It is no surprise that the energy sector underperformed the S&P 500 Index by 21% during the 6-week Covid-19 drawdown. However, the 2020 Covid-19 decline is unlikely to be a good model for future risk events, so we should focus on the other major drawdowns.

Other than the pandemic-induced decline in 2020, the S&P 500 Index saw three big market drawdowns over the

past 25 years: the Global Financial Crisis (GFC) from 2007 to 2009, the recession from 2000 to 2002 and the one in 2022. During each of these drawdowns, the energy sector significantly outperformed the S&P 500 Index by 9%, 24% and an incredible 75% respectively. So, where does the perception that the energy sector is very risky come from?

Well, the sector has had three drawdowns of more than 40% over the past 25 years: Covid-19, the GFC (both highlighted above) and the US shale bust in 2014-2016 (not linked to any of the declines in the S&P 500 Index above, but indicated in the chart that follows). So, a better question would perhaps be: In what environment is the energy sector most at risk of large drawdowns? We evaluate this via both intrinsic risk factors (related to the energy sector specifically) and external factors (related to the broad macro environment).



*It's important to note that higher volatility of returns is not the same as correlated downside risk.*



## The energy sector risk triangle

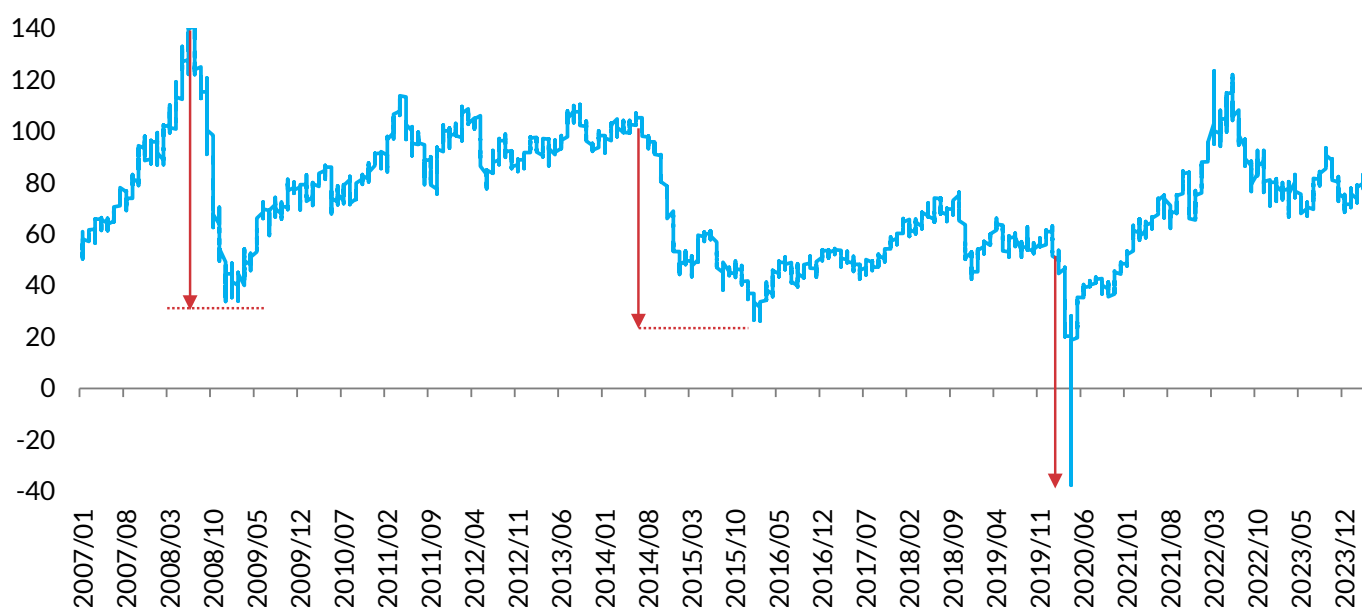
We see three key intrinsic factors that we can compare with historical ranges when evaluating risk in the energy sector:

- the oil price embedded in current earnings expectations
- the industry supply side, represented by real capital expenditure, and
- the level of crowding or popularity, represented by the energy sector weight in the S&P 500 Index.

## Intrinsic factor 1: Is the crude oil price embedded in earnings expectations high or low?

The energy sector's three biggest drawdowns occurred during dramatic falls in spot oil prices (-US\$110 per barrel in 2008/09, -US\$81 in 2014/16, and -US\$91 in 2020).

## Crude oil price (WTI near future) marking big energy index drawdowns



Sources: PSG Asset Management and Bloomberg

Clearly, the risk of a substantial decline in crude oil prices would be a significant factor in determining the probability of a deep drawdown in the energy sector. We have already discussed the unusual nature of the 2020 Covid-19-induced decline, so we will focus on the 2008 and 2014 events.

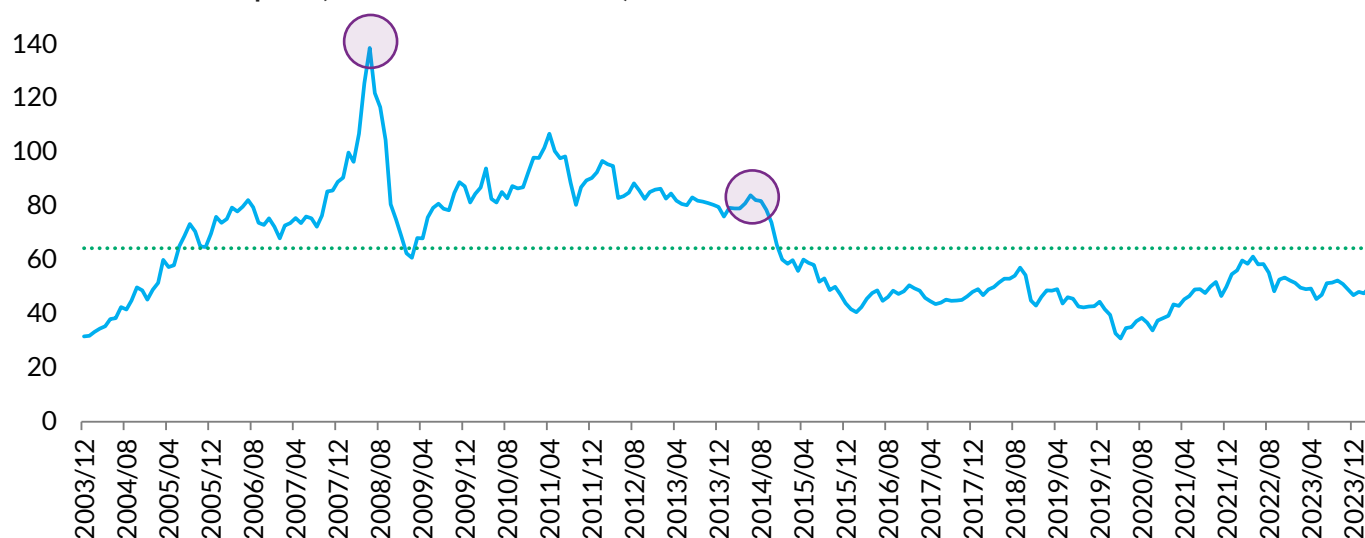
To compare current crude oil prices with historical prices, we make two adjustments. Firstly, we use a real oil price (deflated by US CPI aligned to the June 2008 peak). The current real price on this basis is US\$58 compared with a spot price of over US\$80. Secondly, when evaluating what crude price is embedded in company earnings estimates, we believe a

'dated' price is more appropriate than the spot price. In the next chart we use the 24-month forward price. Equity pricing is forward-looking and shows a higher correlation with dated crude prices than the spot price.

The current real 24-month crude price is under US\$50, compared with a long-term average of US\$64 and in sharp contrast to the levels of US\$138 and US\$84 (circled on the chart) at the beginning of the two major drawdowns.

**We would conclude that the energy sector risk from the current crude price embedded in expectations is relatively low.**

Real dated crude oil price (WTI based to June 2008)



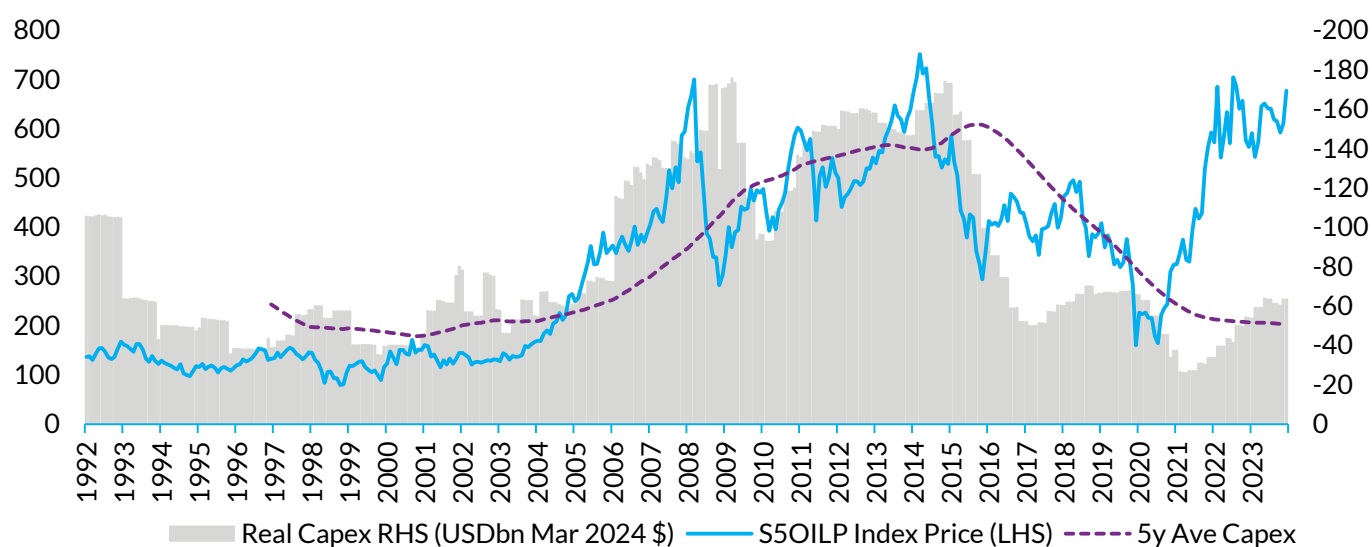
Sources: PSG Asset Management and Bloomberg

### Intrinsic factor 2: How risky is the industry supply side relative to history?

Industry cycles are primarily determined by the amounts of new capacity created vs capacity closed, what we call the 'supply side'. **Capital expenditure is well disclosed and generally carries significant lead times, so we can get excellent data on the future supply side impacts on a sector.** Of course, prices are also impacted by fluctuations in demand, but this is much harder to forecast, so we have found it more productive to focus research on the long-term supply side and to expect to weather demand-related volatility in the shorter term.

In the chart that follows, we express historical capex in March 2024 US dollars, inflated by the producer price index (PPI) for oil drilling and equipment. Historically, capex levels reliably followed share prices with a lag of 1 to 2 years. The 2021 to 2023 period is the exception. Despite a strong appreciation in the energy index, trailing 12-month capex is currently only around US\$60 billion, compared with peaks of over US\$170 billion in 2009 and 2014. More importantly, for evaluating the future supply side, the 5-year moving average of capex (dotted line) is a very subdued US\$50 billion, a level last seen during the 2002 to 2005 period.

### S&P 500 Energy Index price and real capex



Sources: PSG Asset Management and Bloomberg

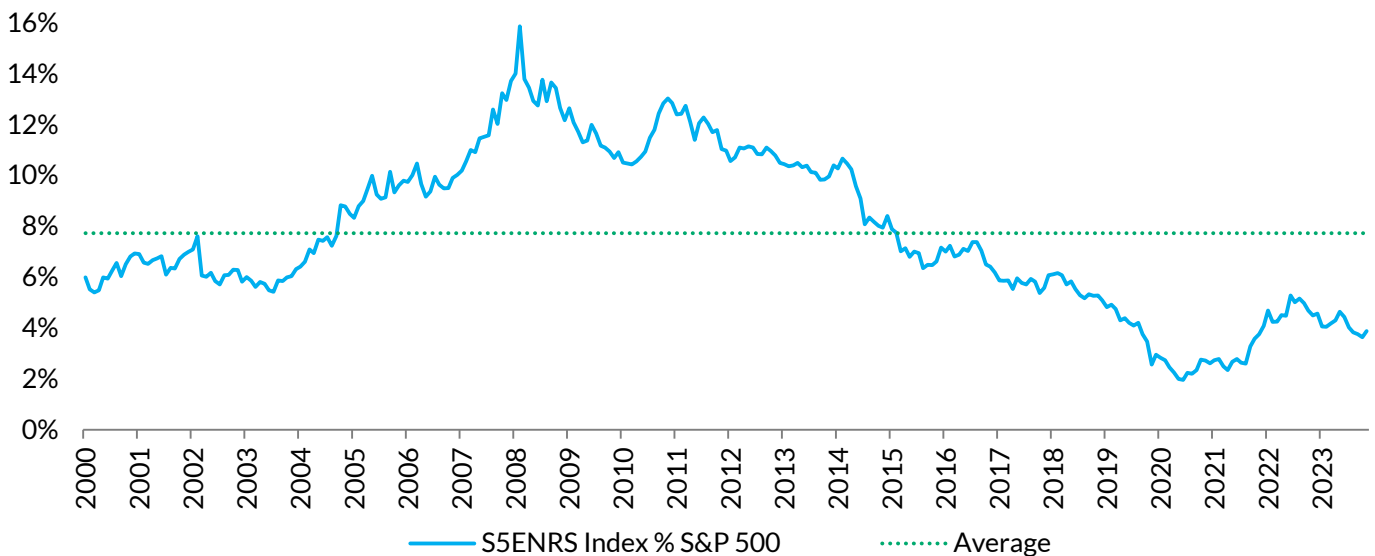
The risk from the energy sector supply side is very low relative to history, with recent capex levels indicating this is likely to prevail for many years.

### Intrinsic factor 3: Crowding into the sector

Over the past 25 years, the energy sector has ranged between 2% and 16% of the S&P 500 Index market capitalisation. We view the current weight (3.9%) and the historic range as providing valuable information as to how

'crowded' the sector is, which greatly assists in assessing drawdown risk. **Low weights in the index, such as during the 2000 to 2005 period and currently, potentially indicate an upside skew to price reactions to good or bad fundamental developments.**

#### Energy sector weighting in the S&P 500 Index



Sources: PSG Asset Management and Bloomberg

### Low intrinsic risk vs tracking error

Our three intrinsic factors all show low levels of current risk for the energy sector. However, most investment processes view sector and stock risk against their current benchmark weightings. This means a 10% position in energy would have been evaluated as low risk early in 2014, as it was similar to the index weight (just before an over 40% drawdown and the worst period of relative performance in 25 years). The same 10% position would be seen as very risky currently (2.5x index bet!) or in the early 2000s when the energy sector's weight was much smaller. This tracking error-based logic contrasts dramatically with our evaluation of the energy sector's intrinsic risk factors.

### External factors

We started our article by showing that the energy sector was less exposed to one external risk factor, a significant drawdown in stocks, than one would expect from its higher return volatility. However, the sector was not spared significant price declines during all drawdowns, except the 2022 episode. In this lies a clue. We believe how the sector performs during periods of market turmoil depends on which investor fears are driving the price declines. Recessionary fears in an environment conducive to deflation (2008/09, 2010/11, 2018, 2020) are likely to see aggressive selling of energy shares. **But where the primary fear relates to inflation and constraints on policymakers' responses, as it did in**

**2022, the energy sector can take on the role of a safe-haven asset and deliver dramatic outperformance and positive nominal returns. In addition, if investors become nervous about geopolitical risks, energy can once again act as a portfolio safe haven.**

This characteristic of the energy sector has effectively lain dormant over the decades of secular stagnation and low macro and geopolitical turmoil prior to 2021/22. This means this environment does not appear in the typical quantitative risk model's look-back period, and hence the inflation and geopolitical safe-haven character is unappreciated by most risk systems.

### A true assessment of risk defies easy explanations

Quantitative systems view holdings in more volatile stocks and sectors as risky. They also attempt to curtail significant off-index positioning or tracking error. In contrast, we currently assess the energy sector as having low intrinsic risk. It also provides significant portfolio protection during external risk-off events driven by inflationary or geopolitical fears. The probability of these fears coming to fruition is assessed as much higher than historically, raising the probability that energy exposure will provide effective risk mitigation. Client portfolios are likely to benefit from a substantial weight in the energy stocks selected by our bottom-up research process.