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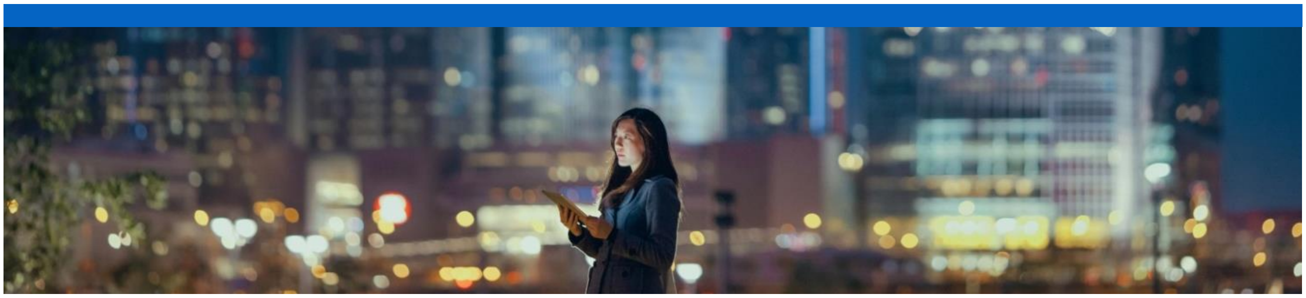

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CIO Strategy Bulletin

CIO Update: OPEC's 'Little Fire' Is Spreading

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SUMMARY

- One of the geopolitical risks we've highlighted is the highly public conflict between the US administration and OPEC during the present period of intense risk for Russian oil exports.
- Last month, OPEC decided to cut output quotas by 2 million barrels per day even before reaching pre-COVID output levels.
- Coupled with the US administration's vow to buy domestic oil to refill the strategic petroleum reserve at a price averaging $70, this has put a floor under oil futures prices.
- The news puts the energy sector – typically one of the most cyclical – in an unusually good position to weather a demand shortfall if a recession hits.
- Regional natural gas markets have diverged markedly on the closure and sabotage of pipelines from Russia to Europe. Intense volatility has followed for LNG prices as Europe has been able to increase storage to capacity. However, late winter supplies could still be in jeopardy. (This has left European gas futures prices far above spot prices.)
- The strong pricing for fossil fuels highlights the improving economics of alternatives, one of our unstoppable trends.
- Improvements in a very simple technology – heat pumps – may provide a way for Europe to win significant energy independence from Russia.
- Roughly half of all energy used globally is for heating. We see industrial firms that help make electrification a reality for consumers as secular winners in the years to come.

OPEC's 'Little Fire' Is Spreading

In our Oct. 9 CIO Strategy Bulletin, we detailed a long list of "little fires," worrisome external factors and geopolitical risks facing the world economy. One of these was the highly public dispute between the US administration and Saudi Arabia following the OPEC decision to cut "2 million" barrels per day from crude oil output. The US criticized the decision as "siding with Russia." OPEC noted political pressure to reduce gasoline prices close to US midterm Congressional elections.

In the meantime, the possibility of ending US oil sanctions on Iran has diminished sharply amid a violent crackdown on anti-government protestors. The US also believes Iran is aiding Russia in its conflict with Ukraine with military drone technology (New York Times, Oct. 19).

In yet another highly public display of frustration, US President Biden said on Monday that he would seek a "excess" profits tax on US oil firms posting record profits from what he termed "war profiteering." Such a tax would reduce incentives for higher production which might otherwise help lower prices. Investment spending to raise output is *profit-seeking* behavior (see figure 1).

While Biden's comments and related investigations into the profits of oil producers and refiners might have a somewhat chilling effect on the industry, practically speaking, we see the chance of a "windfall profits tax" passing in the US as close to zero with the current Congress. And polling data shows the chance of a divided government in the US after the Nov. 8 midterm elections is high and rising (see figure 2). This would make passage of all but the most bipartisan of legislation nearly impossible. For these and other reasons discussed below, major oil firm shares have renewed their strength.

Figure 1: Real investment in oilfield and mining equipment vs. S&P energy sector profits

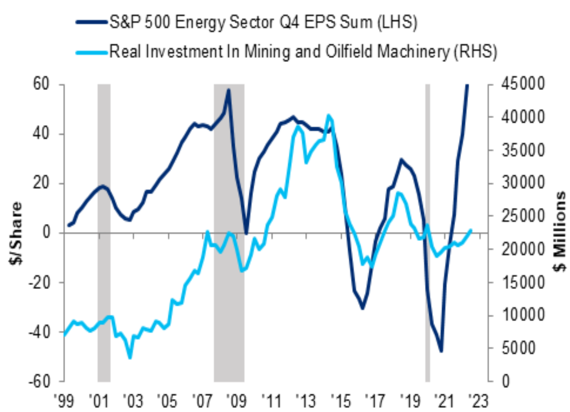
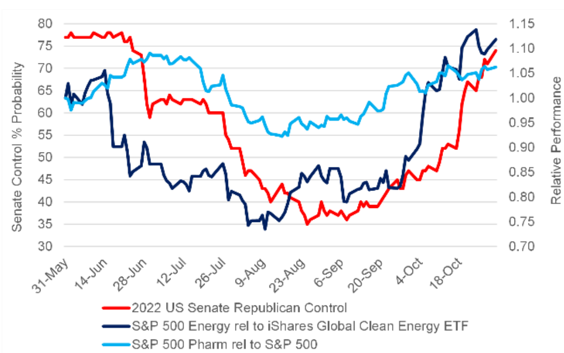


Figure 2: Pharma and traditional energy stocks relative performance vs. PredictIt odds of a Republican control of the Senate



Source: Haver Analytics and Bloomberg through Oct. 27, 2022. Note grey areas are recessions. Implied probabilities are calculated using data offered by PredictIt, the contracts are independent, and their values may not add up to 100 percent. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees or sales charges, which would lower performance. For illustrative purposes only. Past performance is no guarantee of future results. Real results may vary.

Supply Reduced, Equilibrium Price for Oil Somewhat Higher

With OPEC output running somewhat below agreed quotas, the effective cuts the cartel announced last month will undershoot the 2 million headline. However, it is notable that actual OPEC output has not yet rebounded fully to pre-COVID levels (see figure 3). Along with a US vow to purchase domestic oil to refill the Strategic Petroleum Reserve if and when prices fall to $70 per barrel, crude oil futures prices have firmed again (see figure 4).

As we noted in our August *Quadrant*, energy sector profits have historically been the most cyclical of all sectors, seeing the largest profit declines, on average, during recessions. But we think energy producers are in an unusually good position now to weather lower demand. This even ignores the risk that Russian oil supplies might be curtailed further at some point.

Figure 3: OPEC crude oil production, thousands of barrels per day

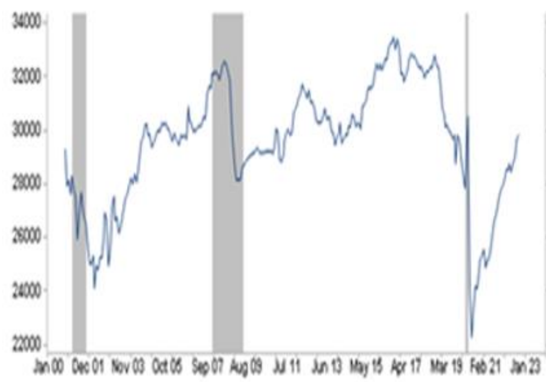
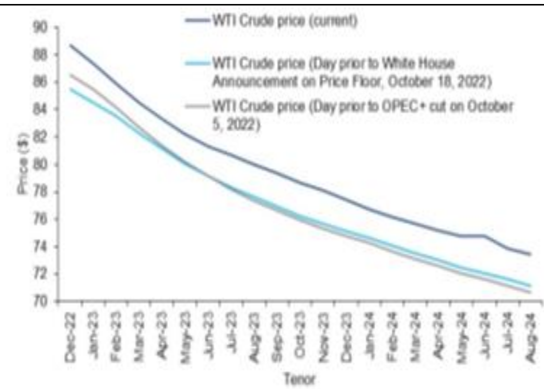


Figure 4: WTI crude oil futures prices pre- and post-OPEC and White House decisions



Source: Haver Analytics and Bloomberg through Oct. 27, 2022. Note grey areas are recession.

The regional natural gas and oil picture diverged starkly this year as Russia's piped gas to Europe suffered disruptions – perhaps permanently. This has improved the outlook for seaborn LNG dramatically. However, physical limits and seasonal demand variation highlight the industry's high volatility.

Prices of natural gas futures in Europe have plunged as German physical storage capacity has been reached and inventories can't rise further over the short term (figure 5). The previous surge in natural gas costs has been perhaps the single largest driver of weakness for gas-importing regional currencies to date (see figure 6 and our September *Quadrant*). A lasting turnaround in energy shortages could be consistent with a bottoming in bearish growth expectations for Europe.

With that said, the actual path of winter weather and the surge in gas demand that comes with it leave markets vulnerable to setbacks and further price shocks. As discussed in the October *Quadrant*, we're not ready to declare an end to the vulnerability of Europe's energy supplies.

Figure 5: EU natural gas and electricity futures prices

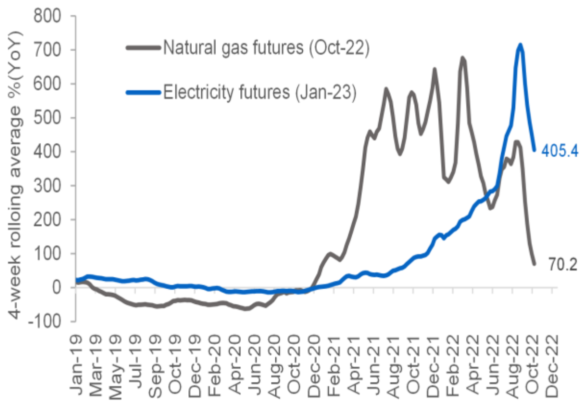
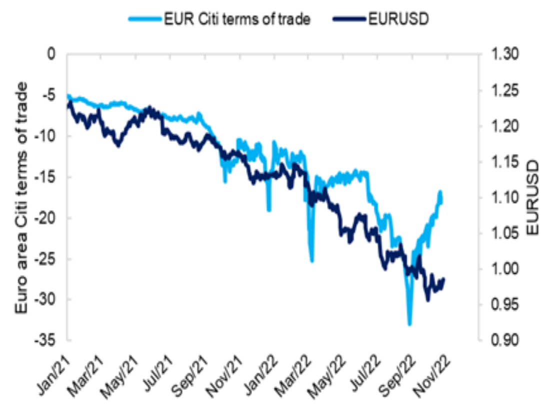


Figure 6: Euro/USD terms of trade (export prices relative to imports)



Source: Bloomberg as of Oct. 27, 2022.

(A Not So Glamorous) Technology to the Rescue

The European natural gas crisis offers an ideal lens to see the shifting stage of our long-term unstoppable trend of “greening the world” (see Outlook 2022). In the past we’ve written about opportunities in renewable electricity and electric vehicles, as they were at a mature enough stage to become viable investments and major market themes. The crisis in *heating a continent* cut off from traditional energy supplies has highlighted the maturation of electric heat pumps as a major area of transformation.

In sharp contrast to prior energy crises, the current European natural gas situation is not a problem as much for industry as it is for citizens and governments. During the oil crisis of the 1970s, concerns centered around the ability for an economy to function as a shortage of oil prevented workers from getting to and from their jobs. The current crisis is centered on natural gas, which is disproportionately used to heat homes, especially in winter, and to a much smaller extent for electricity generation and industrial production. Without the dramatic steps being taken by governments in the region, surging prices in an unfettered free market would risk citizens freezing to death in the winter, an unacceptable outcome.

In recent days, even as Europe’s LNG storage has become full, futures prices for LNG at mid-winter suggest there is still concern about having sufficient energy in the months ahead. This has led to tanker ships circling off the coasts of European ports waiting for an opportunity to unload cargo that is now much less valuable than when they left their points of origin. The impact of this dramatic volatility on LNG producers and distributors is causing supply chain issues. Ships currently waiting to unload cannot head back to get more LNG, and with a 4-week round-trip across the Atlantic, it may squeeze LNG supplies just as the weather gets colder.

Whether for homes, businesses or public spaces, roughly half of all energy used globally is for heating[1]. Until very recently, electric heating solutions were simply unaffordable as they roughly matched the efficiency of fossil fuel-based heating, and used electricity which is typically more expensive per unit of energy than oil or natural gas. In one of the least glamorous but likely most influential changes, modern electric heating has shifted from creating heat to moving it from one place to another. A heat pump – because it moves heat rather than creates it – is not limited to 100% efficiency. Current-generation heat pumps are around 300% efficient, meaning it takes one-third the energy to heat a home compared to one

[1] According to the IEA World Energy Outlook 2022, heat accounted for 50% of global final energy consumption in 2018, and 40% of global carbon dioxide emissions.

with a completely efficient combustion-based heater. But there are already prototypes for next generation heat pumps that are as high as 500% efficient.

Given that half of all energy goes toward creating heat, a completed transition to next-generation heat pumps would mean a 40% reduction in total energy use, all else being equal. This transition will take a long time because it requires replacing heating systems in every building in the world – which is exactly why it's an unstoppable trend and not a short-term trading opportunity. But with governments around the world subsidizing heat pump installation and economics on the same side, the rate of adoption is increasing rapidly, albeit from a low starting level. We have seen other major transformations like this before, such as with LED light bulbs, which went from an expensive novelty to global staple.

Now the market and governments have shown that the time has come to begin ushering out combustion-based heating solutions. As figure 7 shows, it is now substantially less expensive to heat the average home in Germany with a modern heat pump vs. a perfectly efficient gas furnace. For a household that had installed a heat pump and roof-top solar electricity solution anytime from 2018-2020, the duration of payback on that investment has been cut by 85% based on average energy prices of 2022.

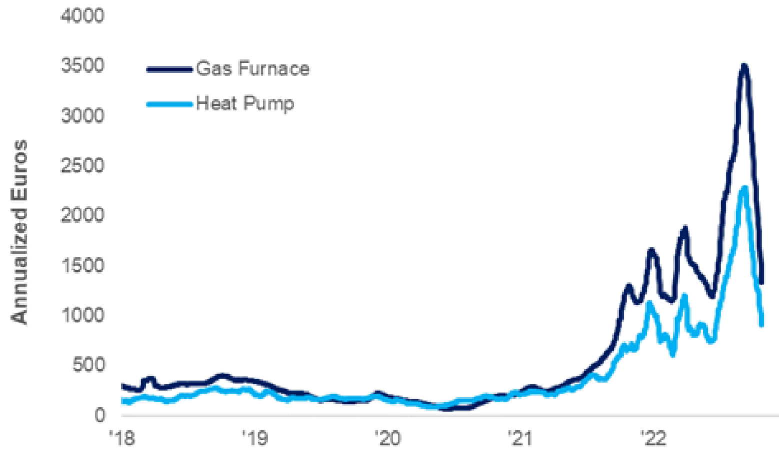
Conclusions

The war in Ukraine has highlighted the need for redundant energy sources for the world economy. A transition to clean energy was never going to abruptly eliminate historic fossil fuel sources. As noted, these may be positioned better than usual at a time of incipient economic weakness. However, the high present cost of energy – particularly once you embed the geopolitical externalities of fossil fuels in the cost – underscores the stronger economics of alternatives.

If home heating migrates to a new form of "electrification," it will free up conventional energy supplies such as natural gas for industrial and agricultural uses. And at the utility level, the transformation to renewable energy sources has the potential to push supply shocks from being a major risk to profitability to a source of excess returns, as we've seen in Europe where electricity providers with substantial renewable portfolios enjoy staggering windfall profits even as those reliant on fossil fuels have faced staggering losses.

Investor interest new electric-vehicle producers and the rare earth metals that power them have captured media attention. We don't dispute these areas will grow and ultimately displace petroleum. However, in Japan, Europe and the US, there are a group of industrial firms that produce a simple technology to help consumers make a transition to electrification. **We see industrial firms that make this a reality for consumers as secular winners in the years to come.**

Figure 7: Market price implied cost to heat an average German home with natural gas versus a modern heat pump



Source: Bloomberg and OCIS calculations as of Oct. 27, 2022. All forecasts are expressions of opinion and are subject to change without notice and are not intended to be a guarantee of future events. Past performance is not indicative of future returns. For illustrative purposes only. Past performance is no guarantee of future results. Real results may vary.

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