

March 30, 2020

Effects of Oil Price Volatility on ETFs

High-Yield Bond ETF prices and returns are sensitive to oil

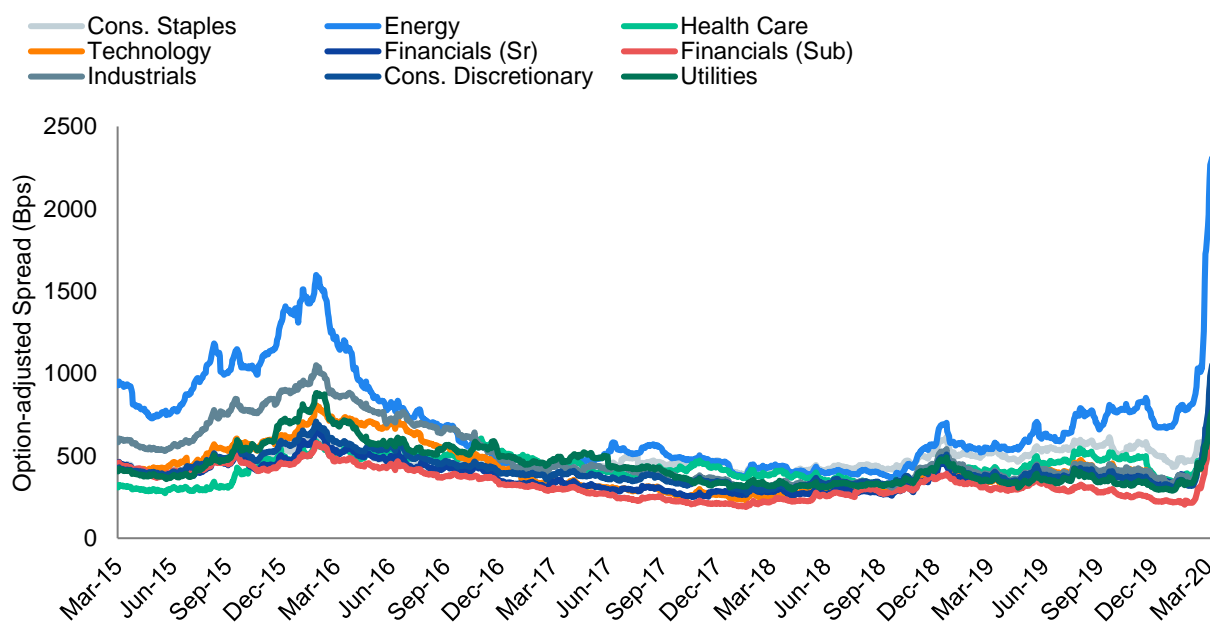
On 3/6, the trading day prior to global oil prices falling by 25%, Energy debt was one of the highest weighted sectors in US High Yield ETFs. At the time, the Energy sector represented over 10% in both of the largest US HY ETFs, accounting for 10.42% and 10.70% of the holdings in HYG and JNK respectively.

The oil price crash had a direct and significant effect on HY ETF prices and returns:

- In HYG, the impact on performance from the portfolio's Energy holdings are nearly double those attributed to any other sector, even those like Communications with a significantly higher representation in the underlying portfolio. [1]
- High Yield Ex Oil & Gas Corporate Bond ETF (HYXE) still dropped on 3/9, but only dropped 2.9% compared to HYG's 4.3% and JNK's 4.7%. This is consistent with the Energy sector's outsized contribution to broad-market HY ETFs.

Heightened default risk for energy bonds impacted investor evaluations of HY ETFs:

US High Yield OAS by Sector

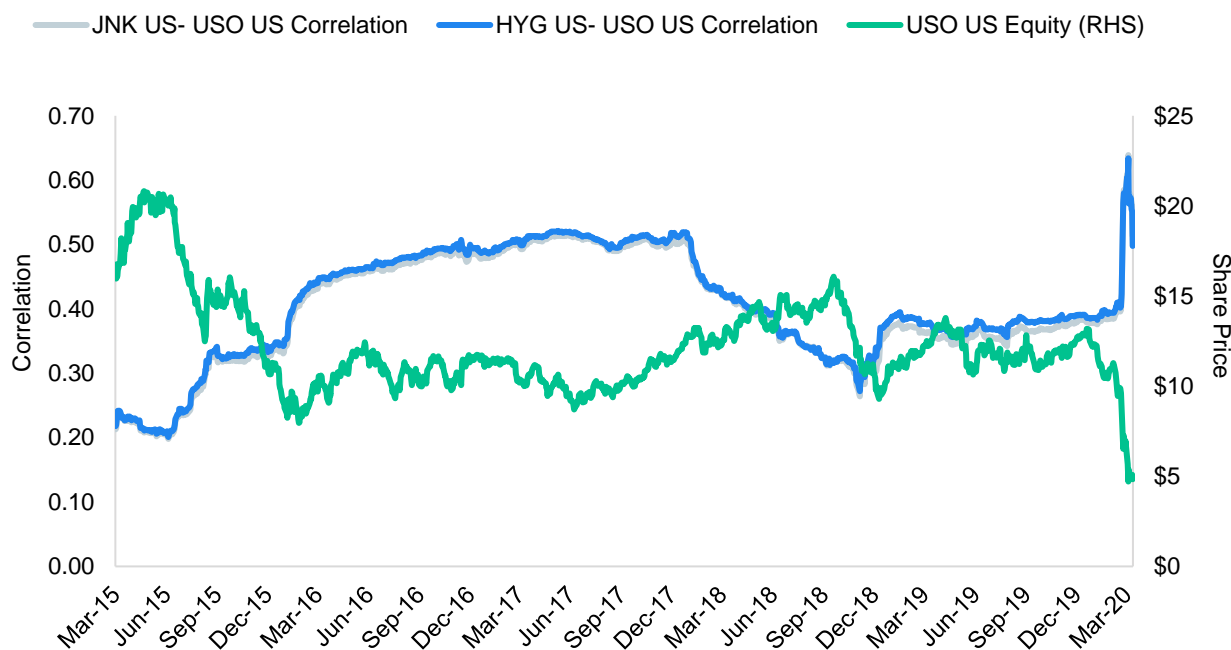


Source: Bloomberg as of March 27, 2020

Declining oil and gas prices raised the risk of default from shale producers, which negatively impacted high yield ETFs like HYG and JNK because of their high sensitivity. Traders priced in this risk, which was compounded by existing illiquidity in the bond market.

HY ETFs See Correlation to Energy Spike During Oil Sell-offs:

US HY ETFs Correlation to USO



Source: Bloomberg as of March 27, 2020. Correlation calculated using daily returns, rolling 2-year periods.

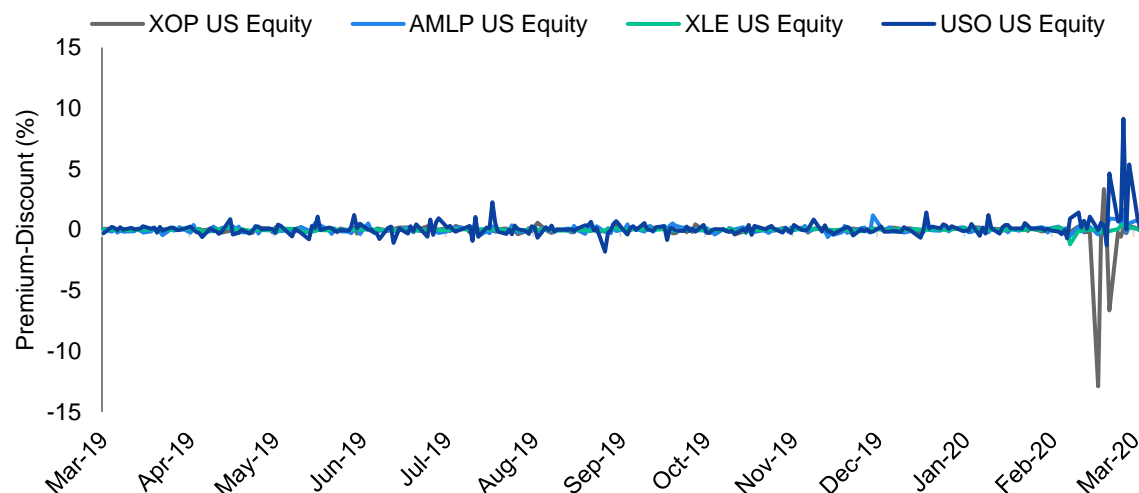
This pattern has held consistently over the last five years: when the price of oil is higher, the correlation between HY and USO trends lower, and vice versa.

Energy ETF prices have dropped alongside crude oil, but vary in their alignment with NAV

Large single-day swings in both directions injected uncertainty into the market, and left investors with limited ability to evaluate fair prices.

Energy ETF Premia and Discounts, March 2019-March 2020

Select Energy ETF Premium-Discounts



Source: Bloomberg as of March 27, 2020

All four ETFs experienced larger-than normal premia and discounts from NAV, but XOP and USO experienced far greater dislocation. [2] This may be due to a variety of factors.

- **Broad dislocation:** the misalignment across the sector may be partly caused by uncertainty in volatile markets and sector-wide selling pressure.
- **USO Premiums:** USO's NAV is calculated based on the WTI crude oil price at 2:30 pm, which can lead to dislocation when the ETF's price changes in response to real-time market information. Larger intraday changes led to greater misalignment, as USO's premiums spiked on particularly volatile days [3].
- **XOP Discounts:** most of the 12.9% discount on 3/9 came out of the closing auction. After spending most of the day relatively in line with NAV, XOP traded 12% of its daily volume in the final minute, which led to imbalances at the close. XOP then traded much closer in line on 3/10, when it opened at a discount of about 1%.

Appendix

[1] Sectors with largest impact on NAV for HYG:

Sector	Energy	Consumer cyclical	Communications	Consumer non-cyclical	Capital goods
Avg. Portfolio Weight	8.99%	14.80%	24.70%	16.54%	8.81
Contribution/Impact on NAV	-3.58%	-2.12%	-1.86%	-1.11%	-0.87%

Source: Bloomberg as of March 27, 2020, date range February 27, 2020-March 27, 2020

[2] Energy ETFs during oil volatility:

Energy ETF Ticker	3/9-3/27 largest dislocation from NAV	3/9-3/27 Avg Premium/ Discount to NAV	1-M Avg Premium/ Discount to NAV (2/6-3/6)	What it Tracks
USO US	9.13% (3/18)	1.65%	0.23%	Price of WTI Crude Oil
XLE US	0.43% (3/19)	0.06%	-0.05%	Cap-weighted index of large-cap US energy stocks that develop, drill, and produce oil & gas
AMLPS US	1.67% (3/18)	0.35%	0.03%	Cap-weighted index of mid- to large-cap US energy MLPs that transport, store, and process energy commodities
XOP US	-12.9% (3/9)	-1.22%	-0.02%	Equal-weighted index of stocks in oil and gas exploration, production, and drilling

[3] USO's Premium spikes occurred on days characterized by large swings in both directions:

- 3/13: 4.6% premium, oil rallies 5% following a week of consistently falling prices
- 3/18: 9.1% premium, oil falls 24% after several days of more modest price drops
- 3/20: 5.3% premium, oil crashes 11% again following a 24% rally on 3/19

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