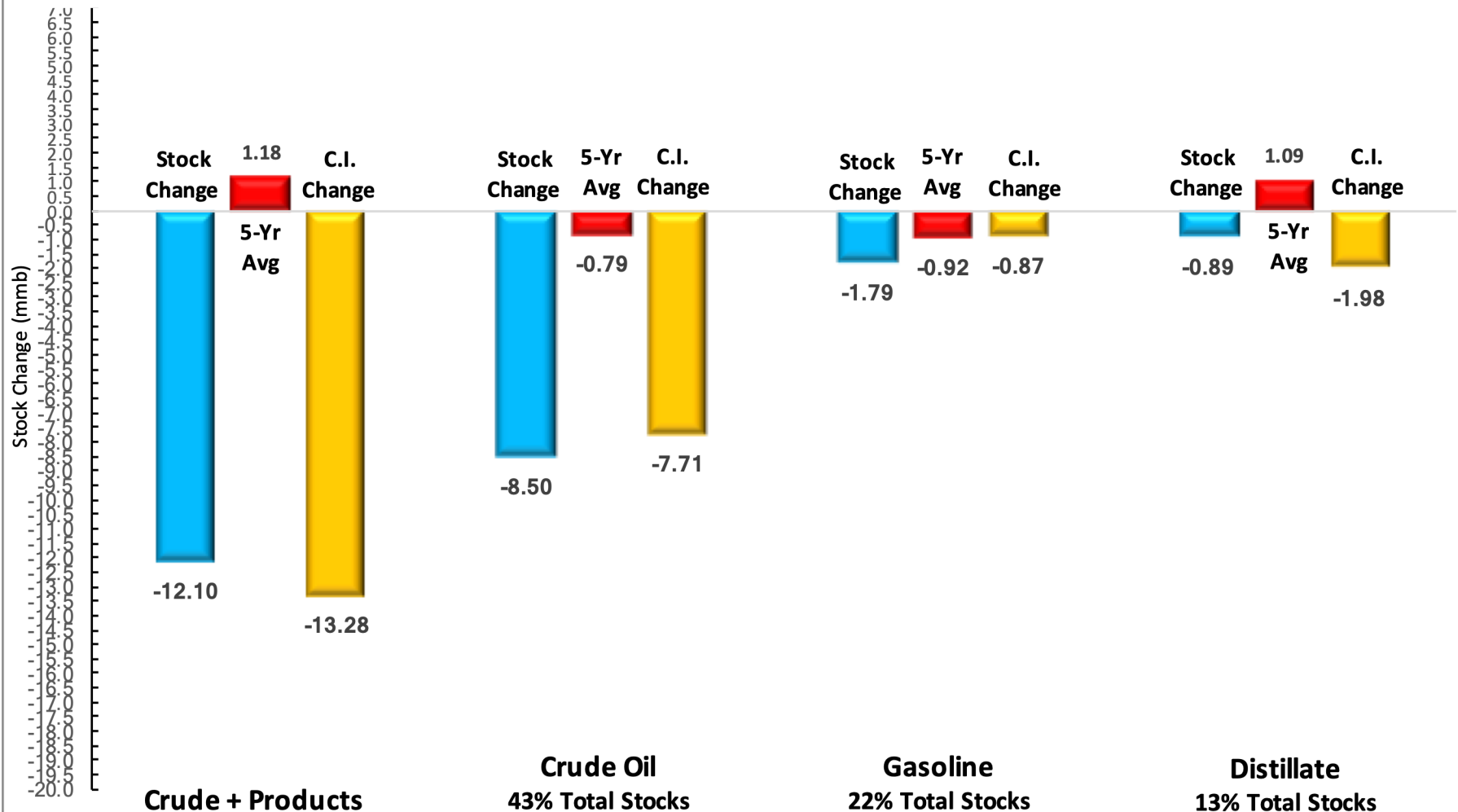


MacroVoices July 31, 2019

**Art Berman
Labyrinth Consulting Services, Inc.**

WTI crude + product comparative inventory decreased -13.28 mmb week ending July 26
A -8.5 mmb crude oil withdrawal dominated stock changes
but inventories of all refined products decreased more than the 5-year average



Source: EIA & Labyrinth Consulting Services, Inc.

EIA 2019/Weekly Updates/Crude Oil & Refined Products Inventories & CI

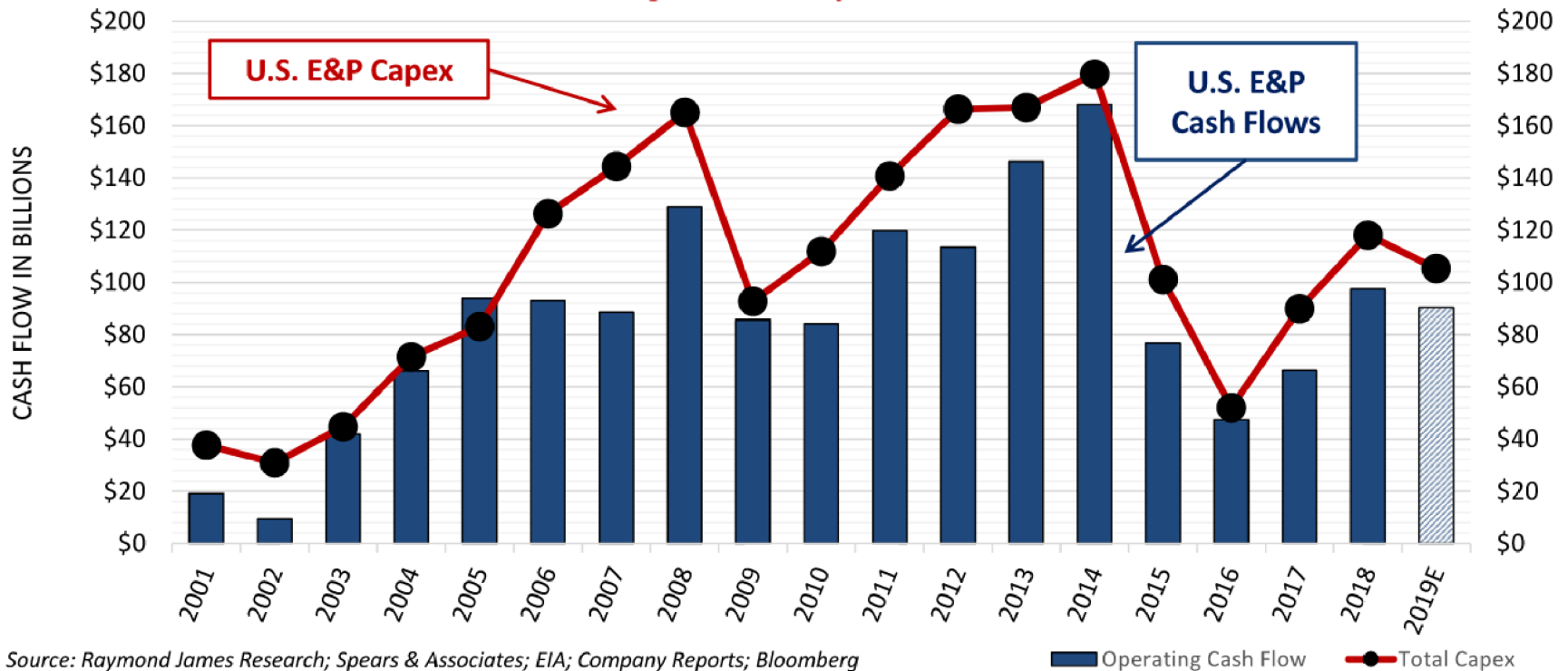
Examining the “cash-flow” narrative for tight oil companies

- Analysts and journalists invent simplistic narratives to explain complex oil and gas market phenomenon—OPEC price war vs shale is a great example.
- These seem sensible & are repeated enough that many smart people believe them.
- The latest is that tight oil companies must live within cash flow—investors are tired of negative cash flow & that is why E&P stock prices are in the tank.
- Like all narratives, it contains enough truth to gain acceptance.
- Investors have never cared about consistent negative cash flow over the last decade.
- E&P almost always had negative cash flow before shale plays.
- Negative cash flow is a necessary component of developing a discovery.
- The problem for shale plays is that the development never stops because of high decline rates.
- The narrative reflects a more fundamental realization that oil prices rallies since 2014 have all failed because of over supply.
- Investors are disaffected by oil companies because they sense there is no hope for big profits until the true supply crisis some time in the next decade.
- Share price performance varies among companies & does not reflect cash flow differences.
- Standardized measure evaluation for 2018 indicates that tight oil break-even prices are much higher--\$60/barrel--than the shale narrative suggests.
- This is consistent with bottom up EUR evaluations I have done in the past.

Oil companies have almost never lived within cash flow

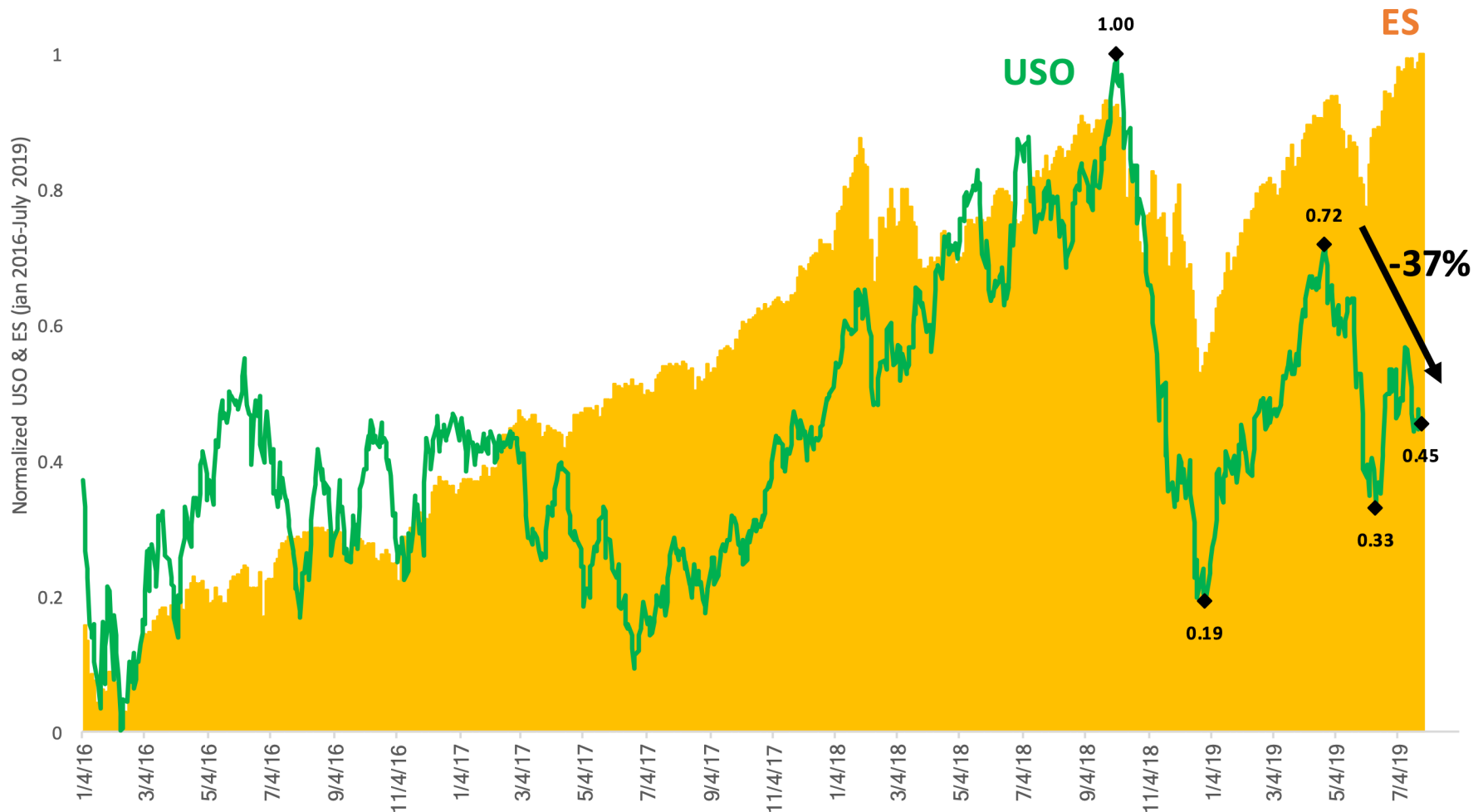
Aggregate U.S. Oilfield Cash Flow and Capex

Assumes U.S. E&P budgets and cash flows are based on \$53 WTI



USO has fallen -55% since October 2018 & -37% since April 2019

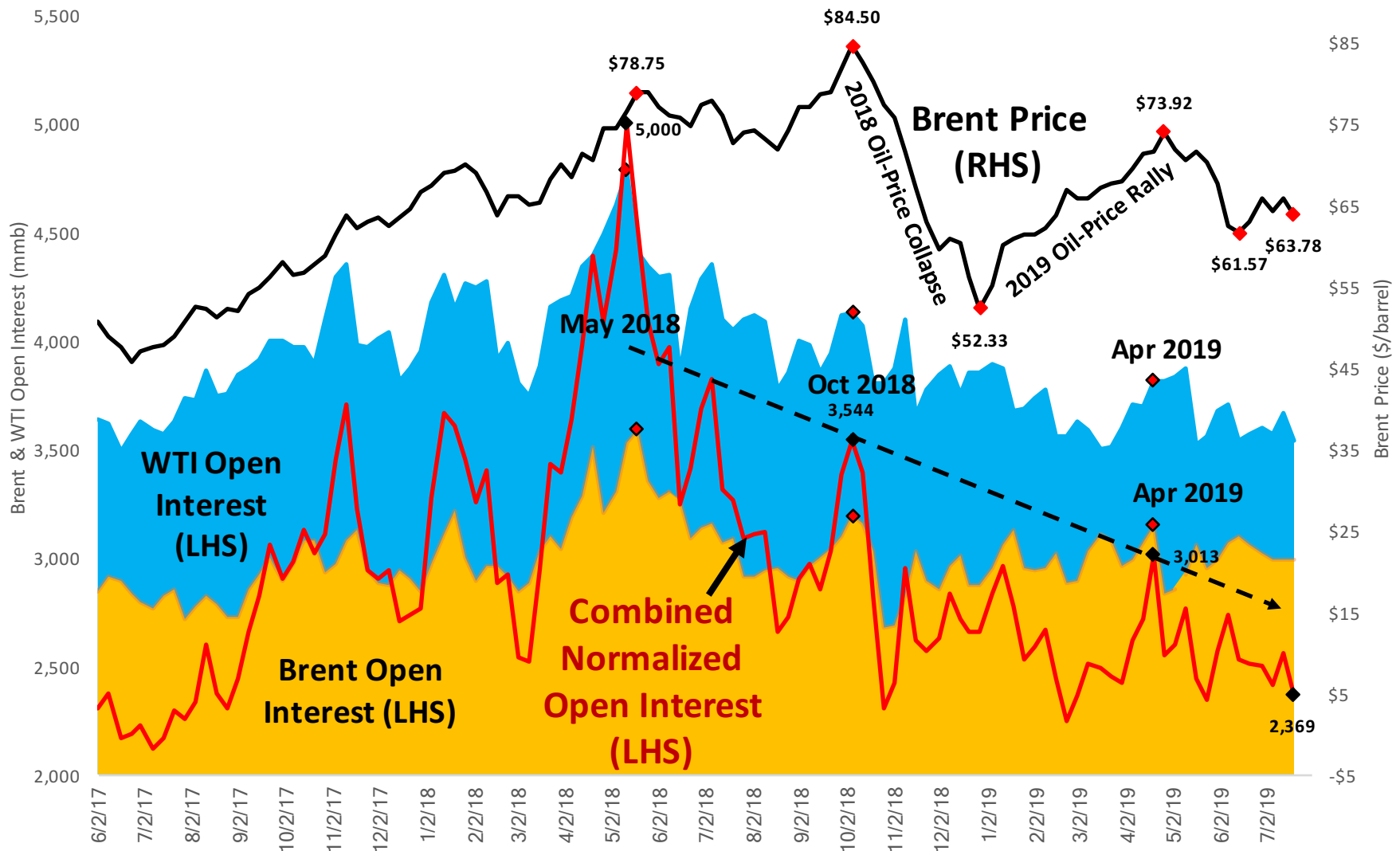
Is this because investors are tired of negative cash flow from tight oil companies?



Source: Yahoo Finance, EIA & Labyrinth Consulting Services, Inc.

Oil & Gas Supply/Sampled E&Ps/Normalized USO 2016-2019

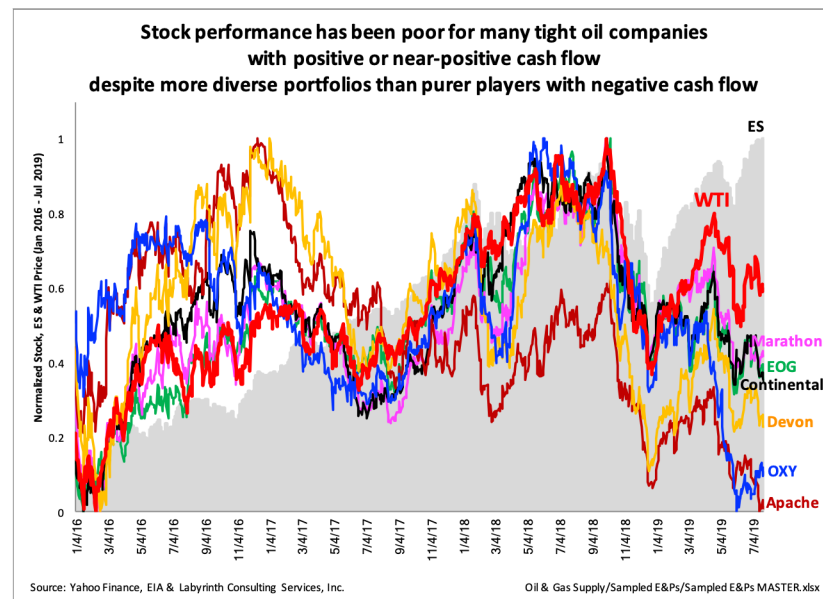
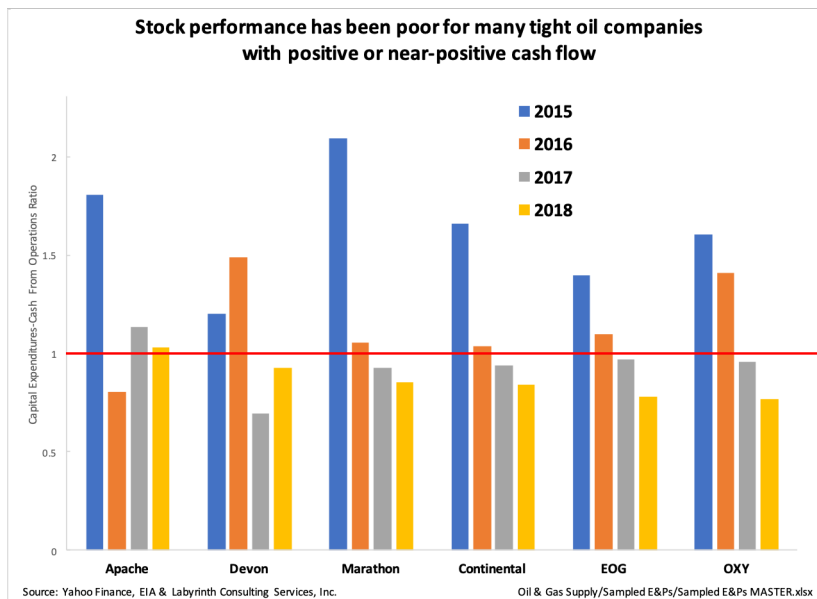
Brent + WTI open interest peaked in May 2018 with successively lower peaks in October 2018 & April 2019



Source: CFTC, St. Louis Fed, Quandl & Labyrinth Consulting Services, Inc.

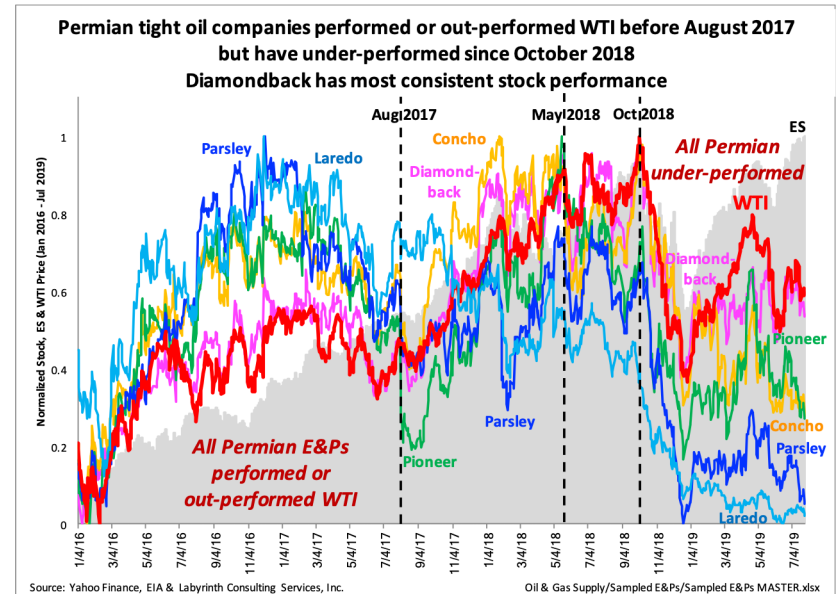
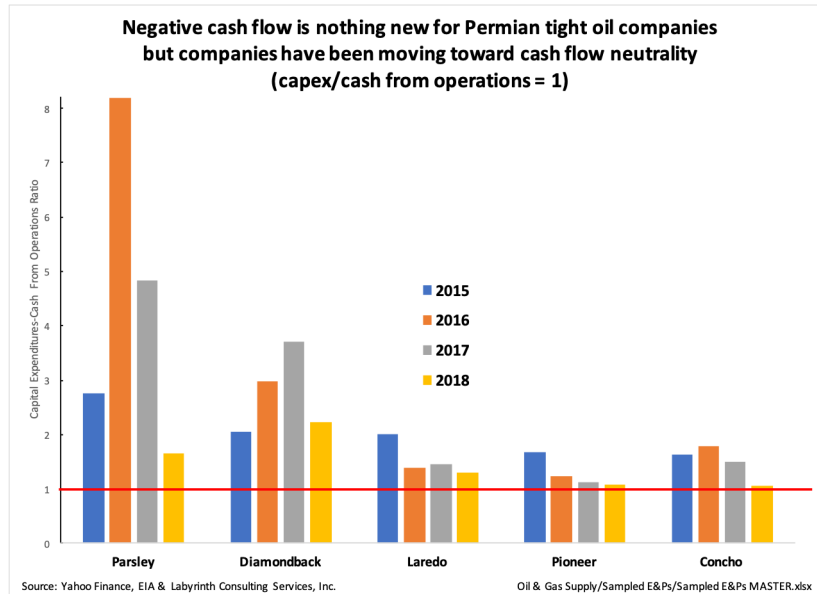
Oil & Gas General/CFTC Futures Master

Stock performance has been poor for many tight oil companies with positive or near-positive cash flow



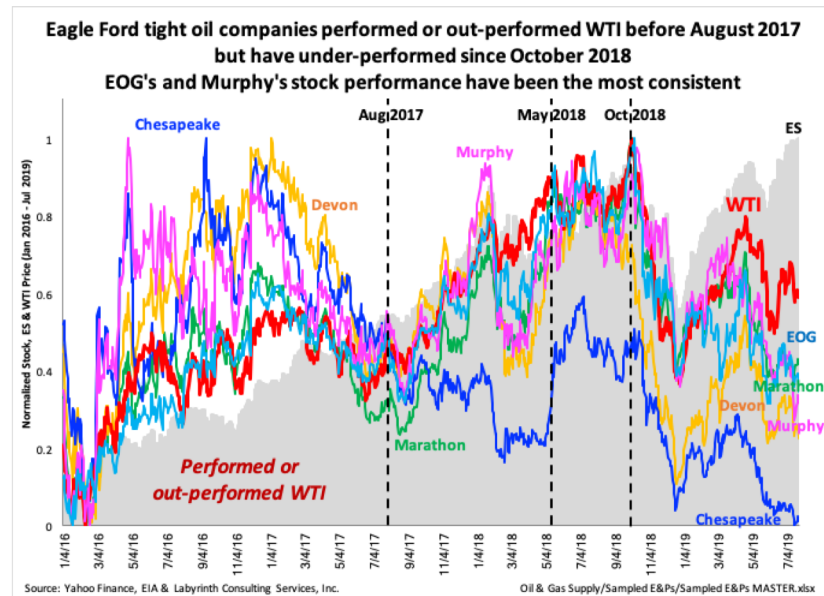
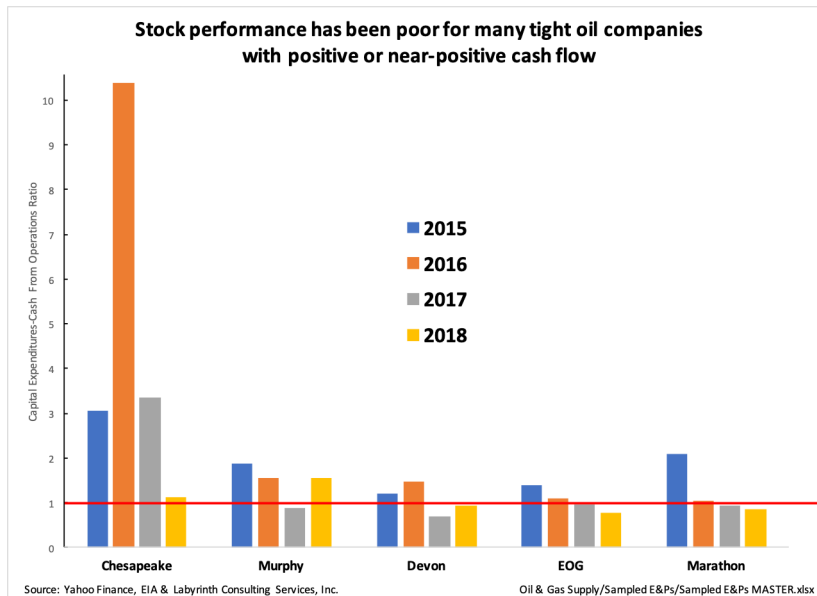
- Devon, Marathon, Continental, EOG and Oxy had positive cash flow in 2017 & 2018.
- Apache was cash-flow neutral in 2018.
- Stock prices have under-performed WTI and ES since October 2018.

Stock performance has little to do with cash flow for Permian tight oil companies



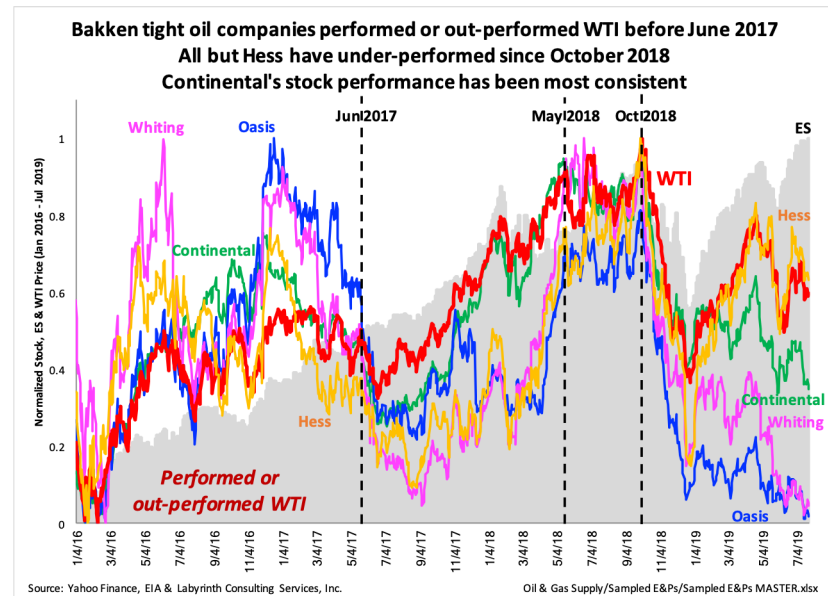
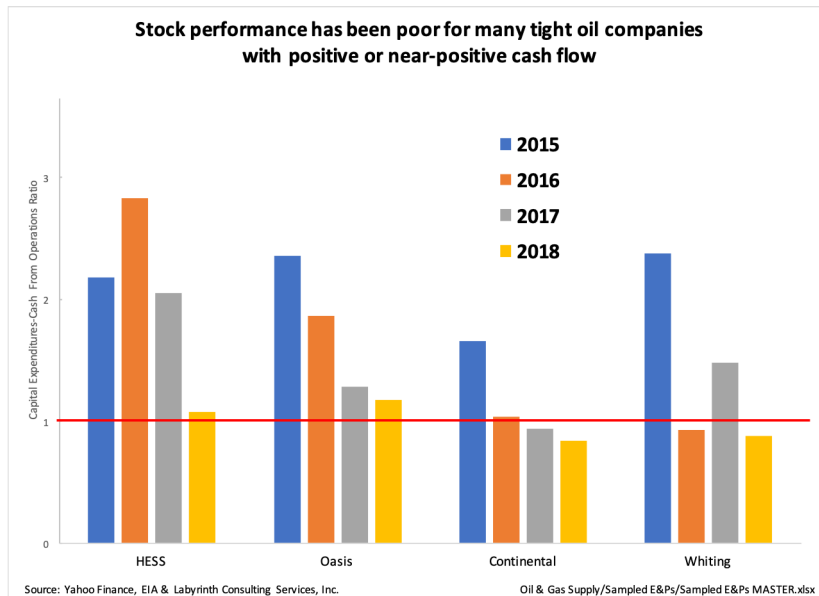
- Diamondback had highest negative cash flow among Permian companies in 2018 yet its stock performance has been better than its peers.
- Pioneer and Concho were cash-flow neutral in 2018 but their stock price has under-performed WTI since October 2018.

Stock performance has little to do with cash flow for Eagle Ford tight oil companies



- EOG, Devon and Marathon had positive cash flow in 2017 and 2018 yet their stock price has under-performed WTI since October 2018.
- Murphy had negative cash flow in 2018 but its stock price was similar to companies with positive cash flow.

Stock performance has little to do with cash flow for Bakken tight oil companies



- Continental and Whiting had positive cash flow in 2018 but their stock price has under-performed WTI since October 2018.
- Hess had positive cash flow in 2018 but its stock price has the best performance in 2019.

Shocker!

Permian break-even prices are higher than other plays

PERMIAN	SMOG \$mm	PUD MMBOE	\$/boe	SEC Price	Break-Even SMOG	Variable OPEX	Break-Even Price	CAPEX/CFO
CXO	\$2,310	188	12.29	\$65.56	\$53.27	\$5.49	\$58.76	1.06
FANG	\$1,964	164	12.00	\$65.56	\$53.56	\$5.98	\$59.53	2.23
CPE	\$1,029	114	9.02	\$65.56	\$56.54	\$3.14	\$59.69	1.31
PE	\$1,888	212	8.92	\$65.56	\$56.64	\$3.16	\$59.81	1.66
PXD	\$1,085	103	10.51	\$65.56	\$55.05	\$5.32	\$60.37	1.09
LPI	\$139	21	6.59	\$65.56	\$58.97	\$6.66	\$65.63	1.31
WTD AVG	\$1,731	163	\$10.50	\$65.56	\$55.06	\$4.65	\$59.71	1.50

	SMOG \$mm	PUD MMBOE	\$/boe	SEC Price	Break-Even SMOG	Variable OPEX	Break-Even Price	CAPEX/CFO
EOG	\$32,426	1380	23.50	\$65.56	\$42.06	\$5.41	\$47.47	0.78
HESS	\$10,650	486	21.91	\$65.56	\$43.65	\$6.14	\$49.79	1.08
OXY	\$9,713	750	12.95	\$65.56	\$52.61	\$3.21	\$55.82	0.77
XOM	\$143,676	7,871	\$18.25	\$65.56	\$47.31	\$9.80	\$57.11	0.54
CLR	\$8,239	832	9.90	\$65.56	\$55.66	\$4.45	\$60.11	0.77
WTD AVG	\$105,569	5,773	\$18.08	\$65.56	\$47.48	\$8.28	\$55.75	0.63