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Portfolio Strategy August 2016

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Energy: The Great Asset Unwind Continues, Enough?

Where Are We in the Capex Cycle?

- Back in the mists of time, in the epoch before the Pokémon walked among us, the energy stocks were on a tear. In those ancient days crude traded in triple digits, the All-American shale story was in full flight, and the energy sector accounted for a staggering 45 cents in every dollar of capex spent by U.S.-listed companies worldwide. It might not seem like it now, but that mythical time was only two years ago, almost to the day.
- Since then the sector has been through the wringer. Capital spending has been slashed by (37)%, the book value of the sector is being written down by (10)% per year, and the U.S. rig count has collapsed by (75)%. On face value that sounds dismal, but when a capex-intensive sector goes kaput equity investors want to see evidence that the companies are taking their diets seriously and right-sizing their asset bases for the new reality.
- So far the companies have delivered on their end of the bargain; they've been sweating off the excess pounds at a rate that exceeds that of past busts. The problem they face, and the critical difference from past cycles, is that Saudi Arabia has very different motivations this time. In their quest for market share the Saudi's have partly decoupled the oil price from the actions of public companies; even a starvation diet might not be enough if the sovereigns leave the spigots open.

No Longer a Free Cash Flow Dry Hole?

- We noticed that more than 70% of the E&P companies in our large-cap universe are posting positive free cash flow surprises, a reading that's higher than any other sector in the market. Admittedly that's because free cash flows have gone from terrible to a little less-bad, but it's still significant because when you're trading on half book the bar is set low and the second derivative is what matters. That's particularly true this time because the arbitrage risk of the sector is near all-time highs, meaning the stocks are embroiled in a ferocious amount of controversy. A turn in free cash flows would certainly help assuage some of that dispute.
- In past busts the correlation between E&P stock returns and the oil price moderated in the third year after peak-capex, because by then the fundamentals kicked in and the stocks started to act like stocks again instead of barrels of oil with tickers. Chronologically we're near that point now, and the free cash flow surprises offer some hope, but the geopolitics continue to slow things down compared to past capex cycles. There's a decent chance history eventually repeats, but expect it to be a slow motion replay.

Drilling for Free Cash Flows

- Energy companies that are cutting their capital spending the most year-over year have been rewarded for hitting the gym and getting in shape. Appendix 1 on page 12 screens the large-cap energy stocks on two metrics: change in capital spending and free cash flow surprise. Apache, Helmerich & Payne, Diamond Offshore Drilling, Cabot Oil & Gas, and ONEOK feature, among others. Appendix 2 on page 13 presents the same screen for the small-caps.
- We've long believed that Nobody Knows Nuttin' when it comes to calling the price of oil, and the events over the past two years have done nothing to change our minds. Nonetheless, after the near-death experience of a heart attack it's important that the patient has the discipline to stick to the doctor's diet and exercise plan. That doesn't guarantee she won't succumb down the road but at least it gives her a fighting chance. The energy stocks are getting to the point where they've put themselves in a good position should the commodity gods cooperate even a little. They're doing what they can, now they need a bit of luck.

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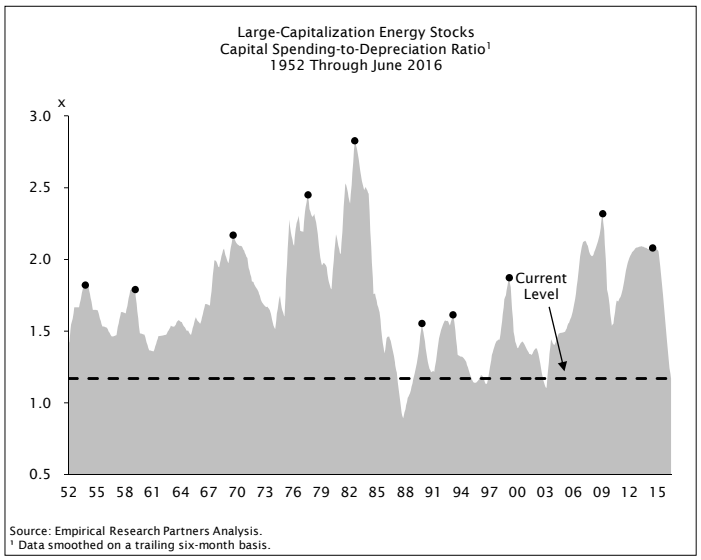
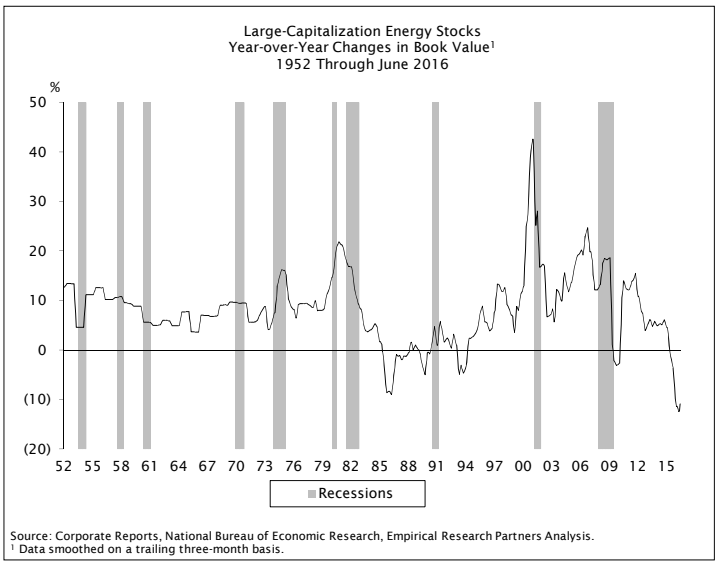
Conclusions in Brief

- We're entering the third year of the Great Asset Unwind…



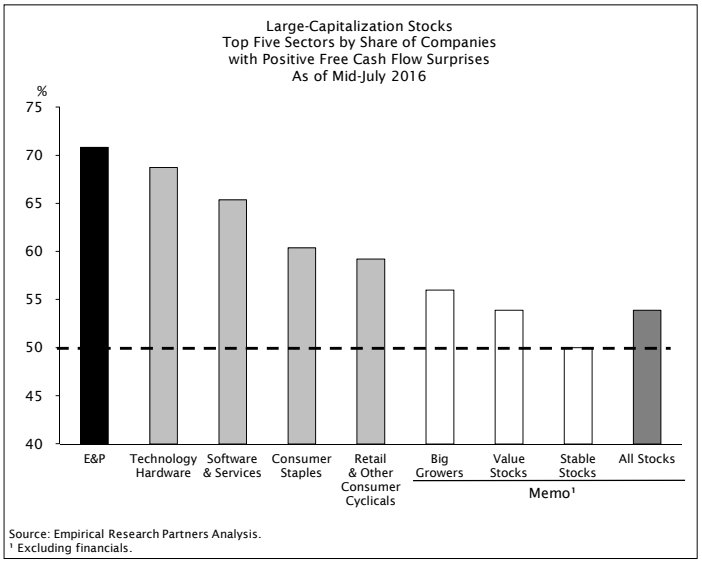
Source: Empirical Research Partners Analysis.
[1] Data smoothed on a trailing six-month basis.

- …And the companies have been right-sizing aggressively:



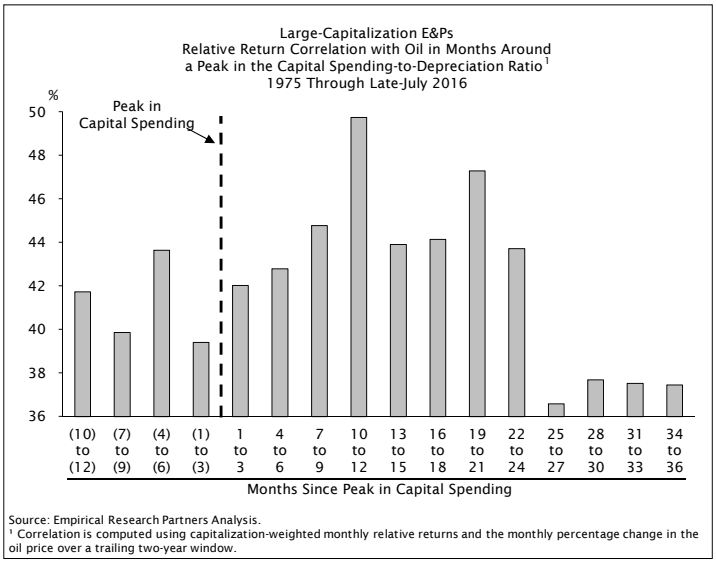
Source: Corporate Reports, National Bureau of Economic Research, Empirical Research Partners Analysis.
[1] Data smoothed on a trailing three-month basis.

- E&Ps lead all sectors in free cash flow surprises:



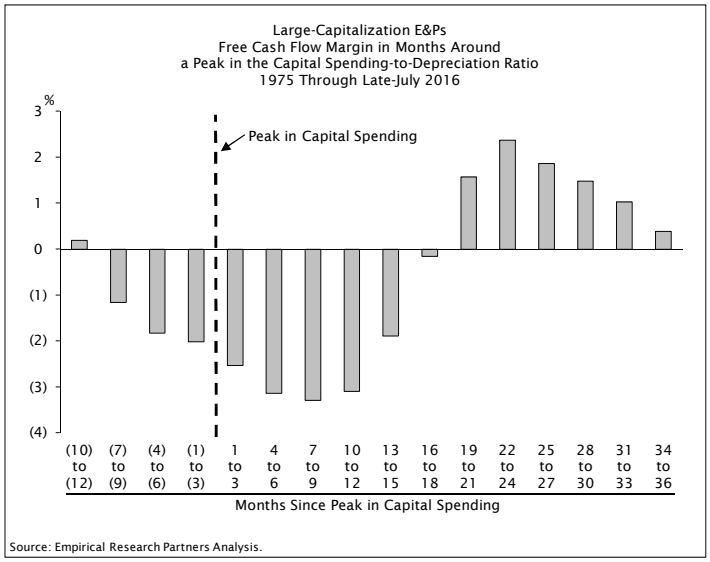
Source: Empirical Research Partners Analysis.
[1] Excluding financials.

- Historically the stocks started to act more like stocks in the third year after peak-capex...



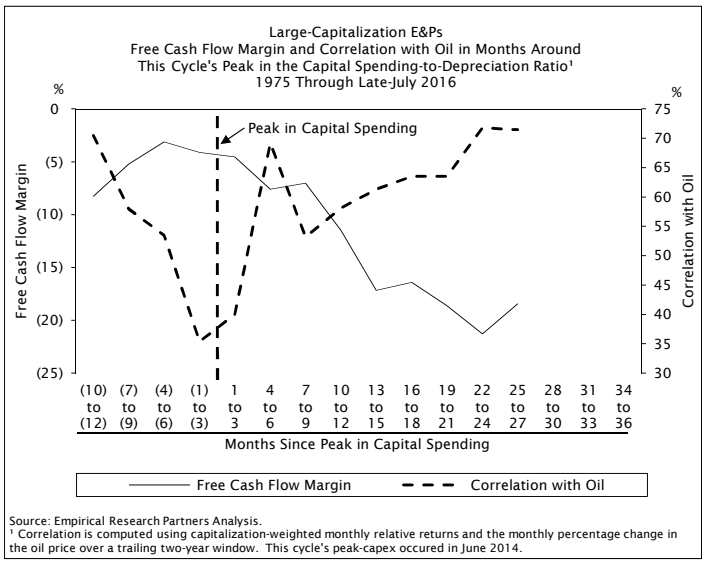
Source: Empirical Research Partners Analysis.
[1] Correlation is computed using capitalization-weighted monthly relative returns and the monthly percentage change in the oil price over a trailing two-year window.

- …As their fundamentals turned:



Source: Empirical Research Partners Analysis.

- We'll closer to that point now but this cycle has played out in slow motion:



Source: Empirical Research Partners Analysis.
[1] Correlation is computed using capitalization-weighted monthly relative returns and the monthly percentage change in the oil price over a trailing two-year window. This cycle's peak-capex occured in June 2014.

Energy: The Great Asset Unwind Continues, Enough?

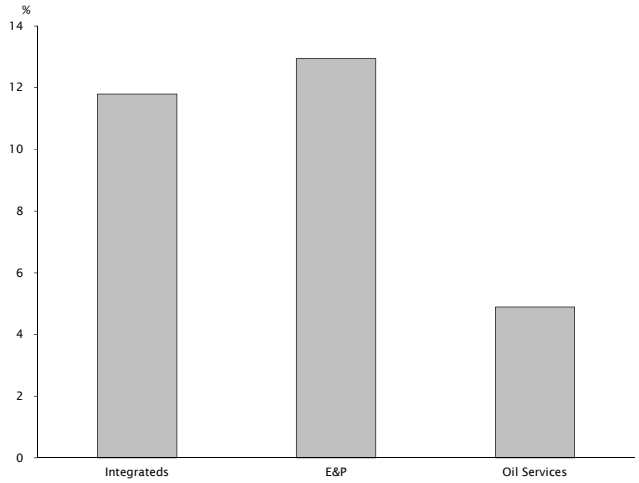
Where Are We in the Capex Cycle?

About this time two years ago the price of crude was $107 and the U.S. shale story was enjoying the kind of front-page hype that's now reserved for smartphone-wielding Pokémon trainers. Since those heady days the energy sector has endured a gut-wrenching run of write-downs, layoffs, and bankruptcies. Positive free cash flows are about as easy to find as that rare Vaporeon that's supposedly lurking in Central Park.

Nonetheless, painful progress has been made. About 18 months ago we analyzed the energy stocks through the lens of the capital spending cycle.[1] In a boom-to-bust sector like energy there's some regularity to how things transpire after the peak in capital spending, which this time around came in mid-2014. Historically the stocks have shown some signs of life in the second and third years after peak-capex. We're just entering the third year now so we took the opportunity to revisit the sector's progress through the Great Asset Unwind.

So far this year the energy issues have done well, besting the market by double-digits with the E&P stocks leading the way (see Exhibit 1). The rally has helped to finally lift the sector's relative price-to-book ratio off its 90-year low (see Exhibit 2). At the peak of this capital spending cycle in 2014 the energy sector accounted for a staggering 45% of all capex by U.S. large-cap companies, but with the drastic cuts in spending over the past two years that's come down by (10) percentage points (see Exhibit 3). The sector's aggregate capital spending-to-depreciation ratio is also down dramatically, and is nearing levels last seen at the dawn of the shale era in the early-2000s (see Exhibit 4).

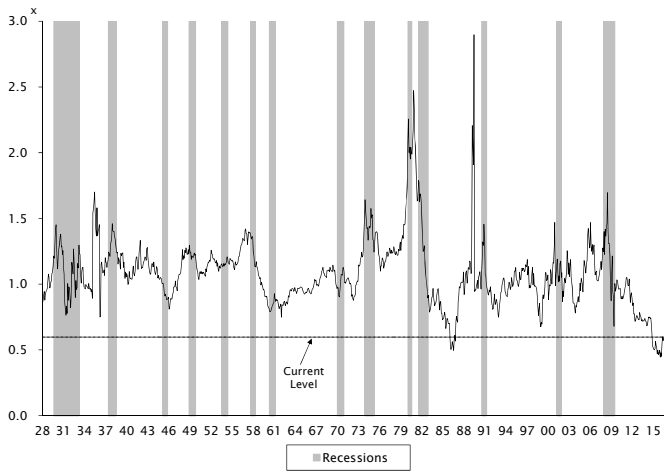
Exhibit 1: Large-Capitalization Energy Stocks
Relative Returns[1]
Monthly Data Compounded
2016 Through Late-July



Source: Empirical Research Partners Analysis.

[1] Capitalization-weighted data.

Exhibit 2: Large-Capitalization Energy Stocks[1]
Relative Price-to-Book Ratios
1928 Through June 2016



Source: Corporate Reports, Empirical Research Partners Analysis.

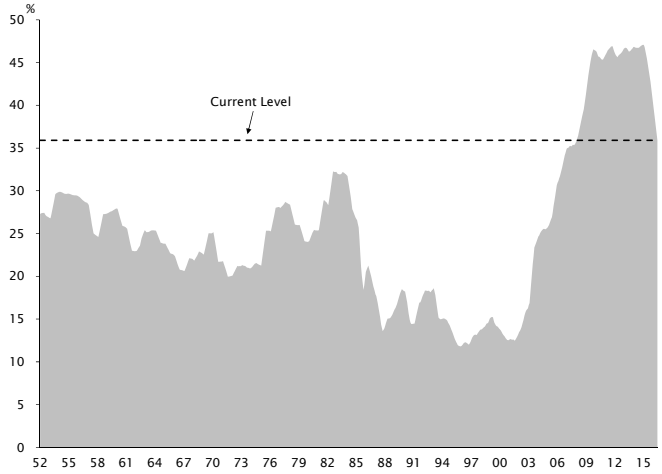
[1] Equally-weighted unwinsorized data excluding pipeline stocks.

Not only has new spending ceased, the base is being written down quickly too; the aggregate book value of the sector has been declining at an annualized rate of more than (10)%, nearly double the run-rate of the mid-1980s bust (see Exhibit 5). Real-time indicators of activity, like the rig count, also plummeted and look to have bottomed (see Exhibit 6). Putting it all together, it's clear company managements have aggressively pulled the few levers that they have control over.

That matters because our past research showed that equity investors won't wade back into a capex-heavy sector until they see concrete evidence that the asset base is being right-sized for the painful new reality. It's a bit like a patient who has survived a heart attack; there's no guarantee she won't succumb down the road but if she's disciplined about taking her blood pressure pills, walking every day, and eating plenty of vegetables then at least she has a fighting chance. Investors need evidence that the energy stocks have come far enough through the write-down cycle that they have at least a shot of generating a satisfactory return on a newly-streamlined asset base if the commodity gods cooperate even a little bit.

[1] *Stock Selection: Research and Results* February 2015. "The Great Asset Unwind: Timing the Energy and Metals Cycles."

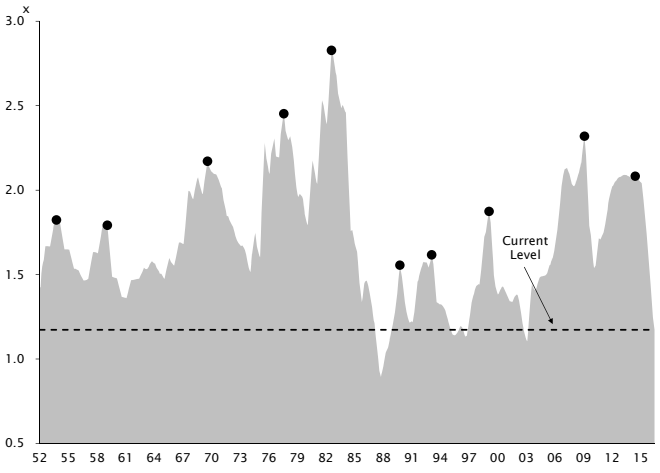
Exhibit 3: Large-Capitalization Energy Stocks
Share of Market-Wide Capital Spending[1]
1952 Through June 2016



Source: Empirical Research Partners Analysis.

[1] Excluding financials and utilities; data smoothed on a trailing six-month basis.

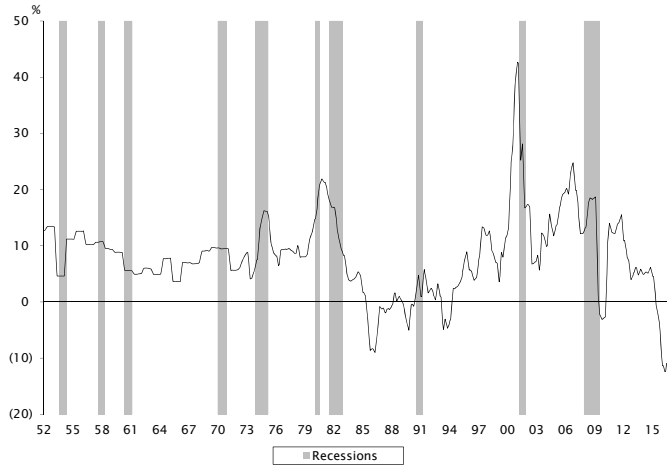
Exhibit 4: Large-Capitalization Energy Stocks
Capital Spending-to-Depreciation Ratio[1]
1952 Through June 2016



Source: Empirical Research Partners Analysis.

[1] Data smoothed on a trailing six-month basis; dots represent cyclical peaks.

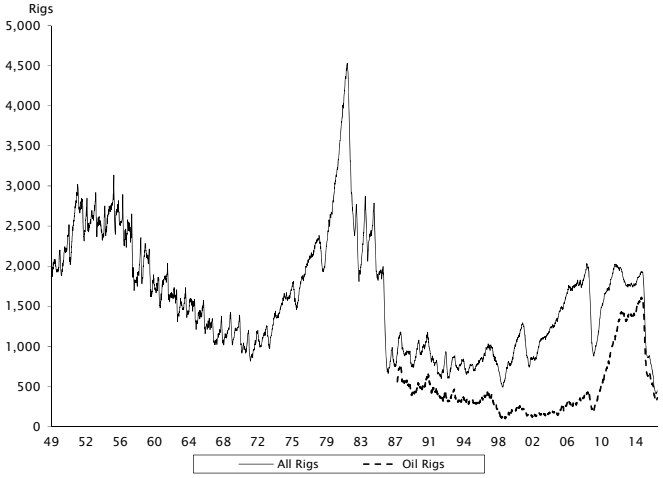
Exhibit 5: Large-Capitalization Energy Stocks
Year-over-Year Changes in Book Value[1]
1952 Through June 2016



Source: Corporate Reports, National Bureau of Economic Research, Empirical Research Partners Analysis.

[1] Data smoothed on a trailing three-month basis.

Exhibit 6: U.S. Rig Count
1949 Though Mid-July 2016

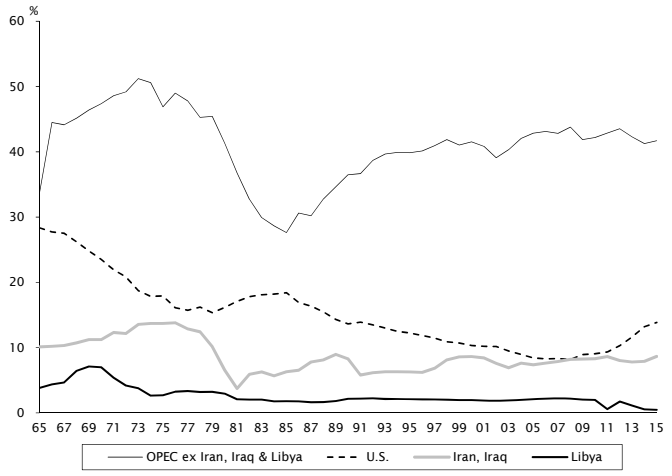


Source: Baker Hughes, Empirical Research Partners Analysis.

Of course the gods in this case take the earthly form of OPEC and the other actors in the geopolitical drama that always swirls around oil. The first act of the play is well known: OPEC, led by Saudi Arabia, opened the spigots to defend market share from the upstart U.S. shale producers (see Exhibit 7). That, plus the return of Iranian, Iraqi, and Libyan production, has boosted supply beyond what's needed for the sluggish global recovery. The international rig count tells the tale, it's down by (45)% since the beginning of 2014 compared to (75)% in the U.S. (see Exhibit 8). The OPEC rig count is down only (17)% over the same period.

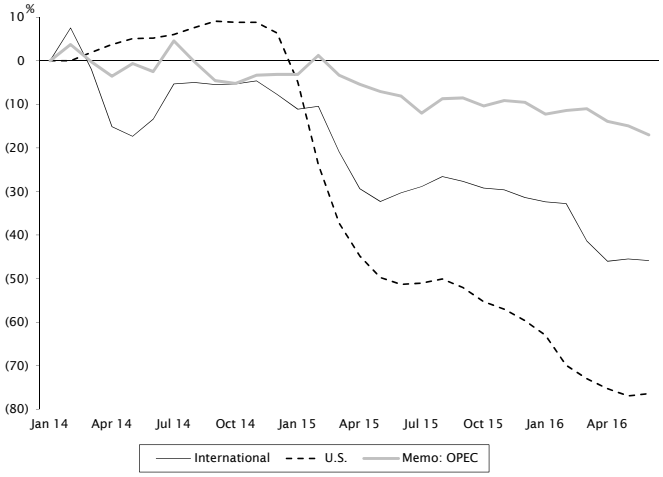
Given all the moving parts in the global oil market we've long believed that Nobody Knows Nuttin' when it comes to forecasting the oil price. That's why we've found the capital spending cycle to be helpful; each cycle is different of course but there are plenty of echoes from past busts. Historically the energy issues have outperformed the market in the second and third year after the peak in capital spending (see Exhibit 9). This time things have taken three or four quarters longer, see the line in the chart. That's probably because the spending binge was bigger than anything seen before, so the diet plan took longer to show results (see Exhibit 10). Plus, the geopolitics are very different this time; the Saudi's pump-at-all-costs strategy has slowed the pass-through from public company capex cuts to the oil price.

Exhibit 7: World Oil Production Share by Country 1965 Through 2015



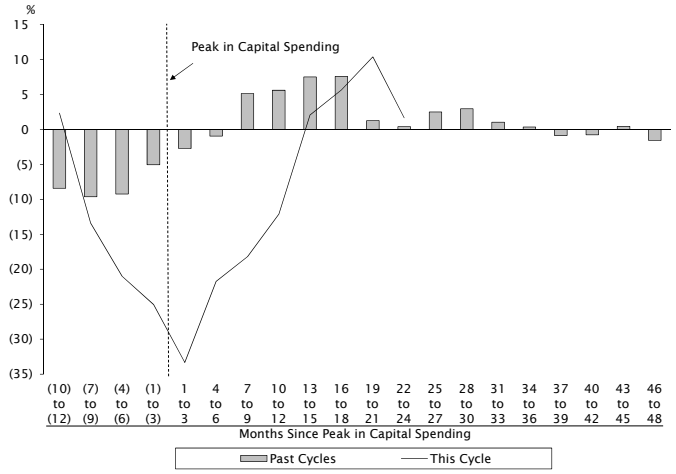
Source: BP Statistical Review of World Energy 2016.

Exhibit 8: The U.S. and International Rig Count Change Since Start of Period 2014 Through June 2016



Source: Baker Hughes, Empirical Research Partners Analysis.

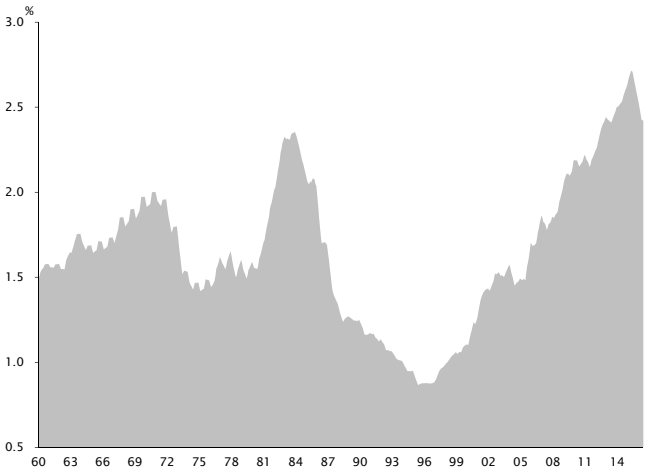
Exhibit 9: Large-Capitalization Energy Stocks Relative One-Year Forward Returns in Months Around a Peak in the Capital Spending-to-Depreciation Ratio[1] 1952 Through Mid-July 2016



Source: Empirical Research Partners Analysis.

[1] Forward returns for the past year are unannualized as a full 12 month period has not yet elapsed.

Exhibit 10: Large-Capitalization Energy Stocks PP&E-to-Global GDP[1] 1960 Through June 2016



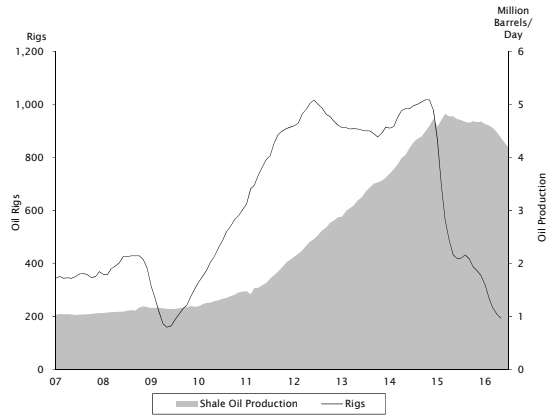
Source: World Bank, IMF, Empirical Research Partners Analysis.

[1] Trailing four-quarter PP&E scaled by annual world GDP in USD current prices; data smoothed on a trailing six-month basis.

New shale technology has also played a role in elongating this cycle; production stayed higher for longer, despite the lower rig count, because more oil was wrung out of the best wells using increasingly efficient fracking methods (see Exhibits 11 and 12). Still, the inevitable could only be postponed for so long and now all three of the key shale patches are running at below break-even rates, meaning production from new wells brought online is insufficient to replace production lost from depletion in existing wells (see Exhibit 13). There have been signs recently though that the rate of decline in U.S. shale production, while still negative, has slowed. If production bounces back quickly that could further draw out this cycle compared to past busts.

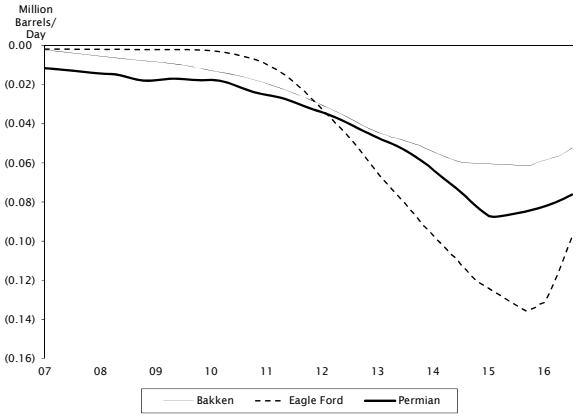
The rate of decline in the sector's plant, property, and equipment (PP&E) balance looks similar to what was seen at the start of the decade-long rationalization that followed the mid-1980s bust (see Exhibit 14). Back then, the stocks worked out once the PP&E growth rate of the sector slipped negative; only then did equity investors believe that the glut of excess capacity was genuinely going to shrink (see Exhibit 15). We argued last year the chart for this cycle would ultimately look similar and it's starting to, although once again the lag has been longer this time (see Exhibit 16).

Exhibit 11: Key U.S. Shale Oil Plays: Bakken, Eagle Ford, Permian
Oil Production and Oil Rig Count
2007 Through Mid-July 2016



Source: Energy Information Agency, Empirical Research Partners Analysis.

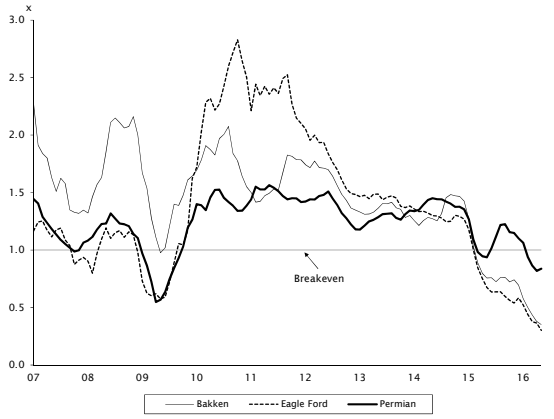
Exhibit 12: Key Tight Oil Plays
Legacy Well Decline Rate[1]
2007 Through Mid-July 2016



Source: Energy Information Agency, Empirical Research Partners Analysis.

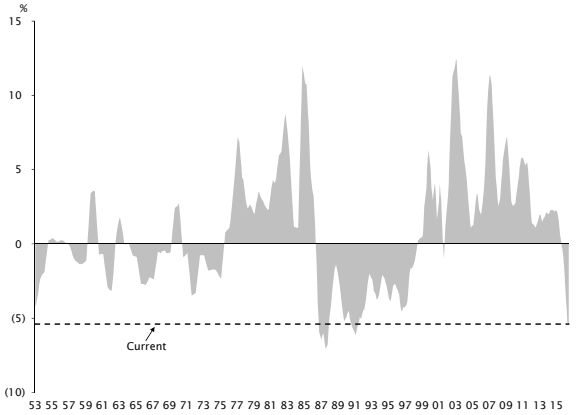
[1] Defined as all wells except those that began producing in current month.

Exhibit 13: Key Shale Oil Fields
Ratio of New-Well Production to Existing-Well Production Declines
2007 Through Mid-July 2016



Source: Energy Information Agency, Empirical Research Partners Analysis.

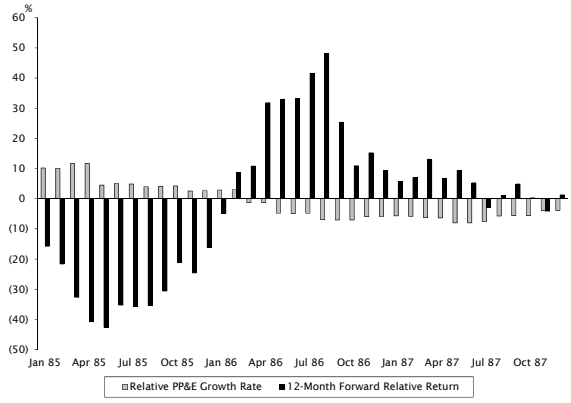
Exhibit 14: Large-Capitalization Energy Stocks
Relative PP&E Growth Rate[1]
1953 Through June 2016



Source: Empirical Research Partners Analysis.

[1] Year-over-year change in the aggregate PP&E of energy stocks minus that of the market (excluding financials and utilities); data smoothed on a trailing six-month basis.

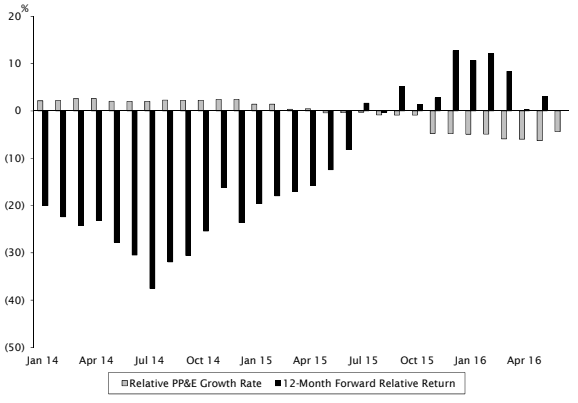
Exhibit 15: Large-Capitalization Energy Stocks
Relative PP&E Growth Rate and Relative 12-Month Forward Returns[1]
1985 Through 1987



Source: Empirical Research Partners Analysis.

[1] Year-over-year change in the aggregate PP&E of energy stocks minus that of the market (excluding financials and utilities); returns are capitalization-weighted.

Exhibit 16: Large-Capitalization Energy Stocks
Relative PP&E Growth Rate and Relative 12-Month Forward Returns[1]
2014 Through June 2016



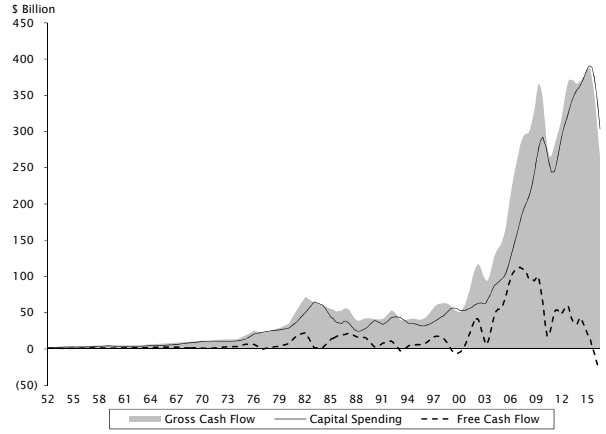
Source: Empirical Research Partners Analysis.

[1] Year-over-year change in the aggregate PP&E of energy stocks minus that of the market (excluding financials and utilities); returns are capitalization-weighted and those for most recent 12 months are unannualized.

No Longer a Free Cash Flow Dry Hole?

Despite the dramatic cuts in capital spending, free cash flow production is still decidedly negative (see Exhibit 17). That's because gross cash flows have fallen faster than even the most aggressive capex cuts (see Exhibit 18). However we did notice that among E&P companies the number of positive free cash flow *surprises* has been rising and has now topped 70%, up from a low of 15% back in mid-2015 (see Exhibit 19).

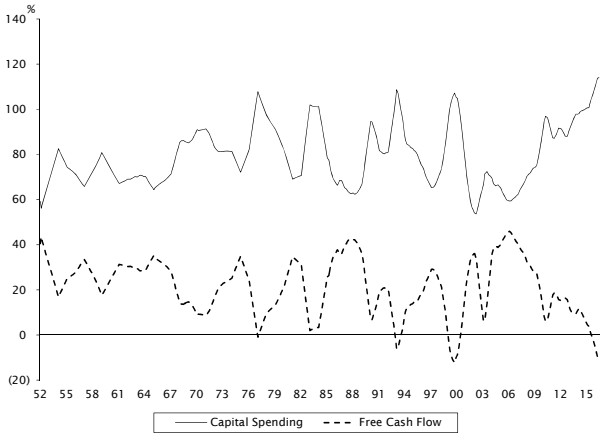
Exhibit 17: Large-Capitalization Energy Stocks
Nominal Gross Cash Flow, Capital Spending, and Free Cash Flow[1]
1952 Through June 2016



Source: Empirical Research Partners Analysis.

[1] Data smoothed on a trailing six-month basis.

Exhibit 18: Large-Capitalization Energy Stocks
Capital Spending and Free Cash Flow as a Share of Gross Cash Flow[1]
1952 Through June 2016

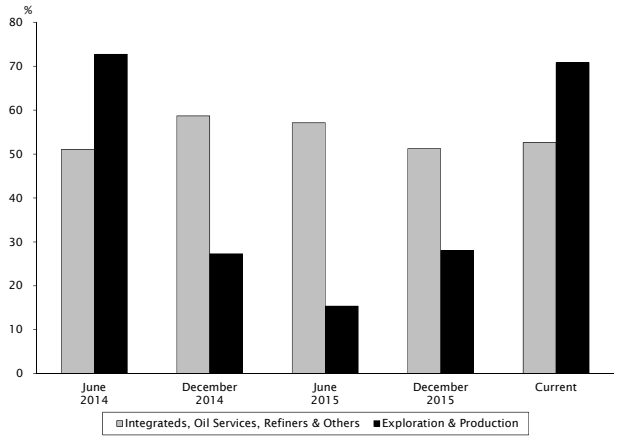


Source: Empirical Research Partners Analysis.

[1] Data smoothed on a trailing six-month basis.

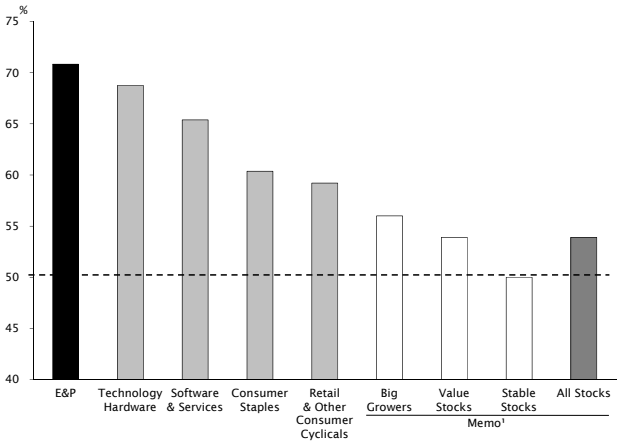
Our definition of free cash flow surprise compares a company's latest quarterly free cash flow with its trend over the past 20 quarters, adjusted for the historical variance in free cash flow production, so a positive surprise in the case of the E&Ps mostly means going from terrible to slightly-less-bad. Nonetheless, when a capex-intensive sector is trading at a fraction of book value it's always been the second derivative that matters. In fact, the E&Ps now have the highest share of positive free cash flow surprises of any sector in the market (see Exhibit 20).

Exhibit 19: Large-Capitalization Energy Stocks
Share of Companies With Positive Free Cash Flow Surprises
2014 Through Mid-July 2016



Source: Empirical Research Partners Analysis.

Exhibit 20: Large-Capitalization Stocks
Top Five Sectors by Share of Companies with Positive Free Cash Flow Surprises
As of Mid-July 2016

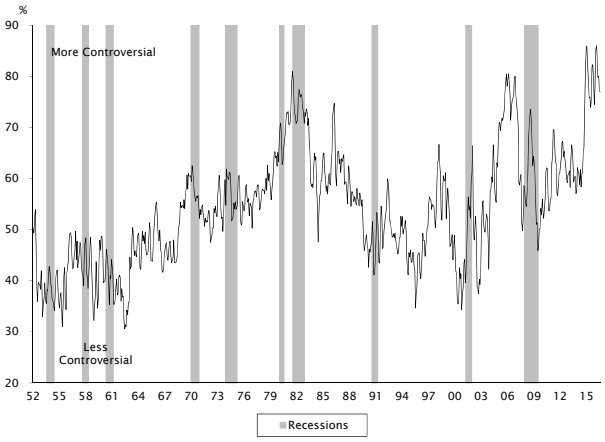


Source: Empirical Research Partners Analysis.

[1] Excluding financials.

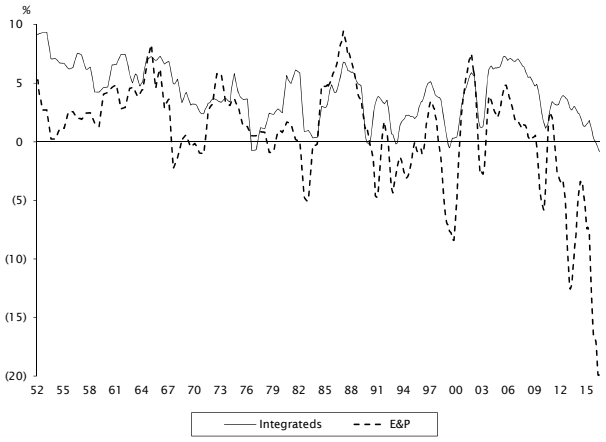
This nascent improvement in free cash flow production is vital for the E&Ps because they're stuck in the worst free cash flow hole they've ever been in (see Exhibit 21). Even the more stable free cash flow margins of the diversified integrateds are scraping the bottom-end of their historical range. Given that dismal backdrop it's no surprise the level of controversy surrounding the sector, which we measure using a metric called arbitrage risk, is near all-time highs (see Exhibit 22). From here assuaging that dispute matters and nothing salves quite like the signs of survival that come embedded in positive free cash flow surprises.

Exhibit 21: Large-Capitalization Energy Stocks
Average Arbitrage Risk Rank
(100=Highest; 0=Lowest)
1952 Through Early-July 2016



Source: National Bureau of Economic Research, Empirical Research Partners Analysis.

Exhibit 22: Large-Capitalization Energy Stocks
Free Cash Flow Margins[1]
1952 Through June 2016



Source: Empirical Research Partners Analysis.

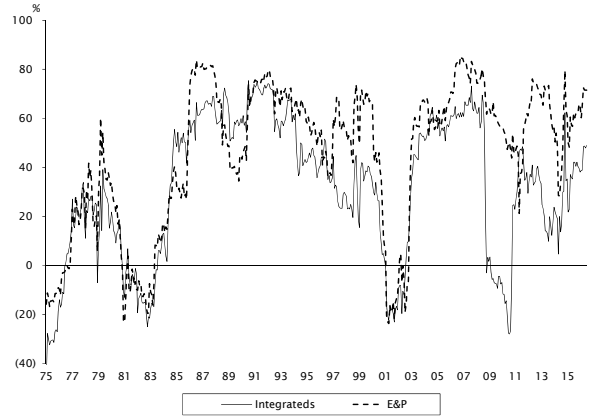
[1] Data smoothed on a trailing six-month basis.

Another important milestone for the sector will be when the stocks' correlation with the oil price starts to break down. Of course there's almost always a positive correlation, but usually in a bust the stocks become near perfect commodity proxies, especially the E&Ps which lack the vertical diversification of their integrated peers (see Exhibit 23). What does it take to get the E&Ps to start acting like stocks again?

One way to think about that is to look at how long it typically takes for the stocks' high correlation with oil to break down in an oil crash (see Exhibit 24). In past cycles the correlation between the relative performance of E&P stocks and the price of oil peaked on average going into the second year after peak-capex before declining in the third year. The moderation in correlation came once some green shoots emerged in the fundamentals. On average free cash flow margins returned to positive territory about a year and a half after peak-capex (see Exhibit 25). When that happened the E&P stocks started to act more like equities and less like barrels of oil with tickers painted on them.

This time the correlation is still elevated even as we enter the third year of the Great Asset Unwind; as we saw earlier the clock seems to be running three to four quarters slow this cycle, most likely because of the sheer size of the asset base we're starting with and Saudi Arabia's supply response (see Exhibit 26). Nonetheless, despite being behind schedule in calendar-time we appear to be nearing the point where the free cash flow margins and the correlations might reverse. The median free cash flow surprise for E&Ps has turned positive for the first time since October of 2014 (see Exhibit 27).

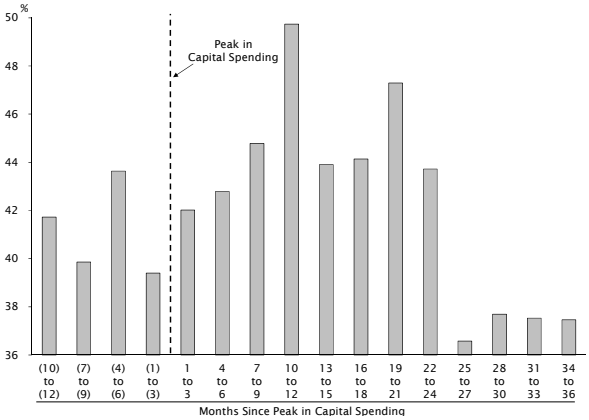
Exhibit 23: Large-Capitalization Energy Stocks
Correlation of Relative Returns with Oil[1]
1975 Through Late-July 2016



Source: Empirical Research Partners Analysis.

[1] Correlation is computed using capitalization-weighted monthly relative returns and the monthly percentage change in the oil price over a trailing two-year window.

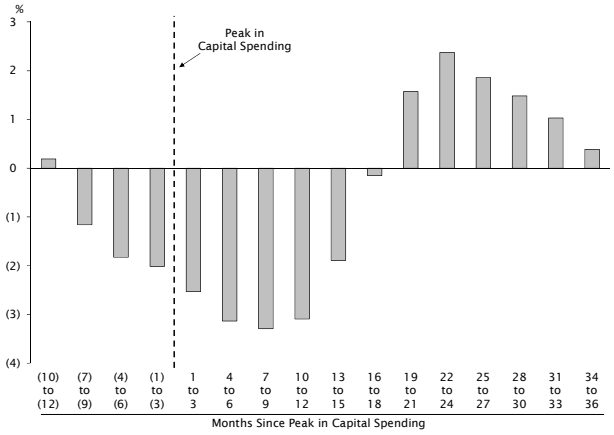
Exhibit 24: Large-Capitalization E&Ps
Relative Return Correlation with Oil in Months Around a Peak in the Capital Spending-to-Depreciation Ratio[1]
1975 Through Late-July 2016



Source: Empirical Research Partners Analysis.

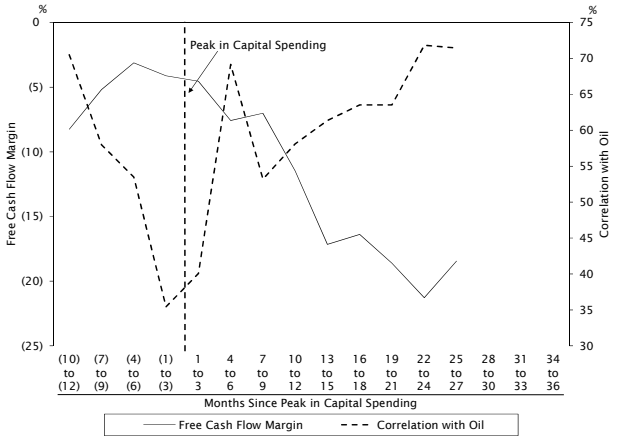
[1] Correlation is computed using capitalization-weighted monthly relative returns and the monthly percentage change in the oil price over a trailing two-year window.

Exhibit 25: Large-Capitalization E&Ps
Free Cash Flow Margin in Months Around a Peak in the Capital Spending-to-Depreciation Ratio
1975 Through Late-July 2016



Source: Empirical Research Partners Analysis.

Exhibit 26: Large-Capitalization E&Ps
Free Cash Flow Margin and Correlation with Oil in Months Around This Cycle's Peak in the Capital Spending-to-Depreciation Ratio[1]
1975 Through Late-July 2016



Source: Empirical Research Partners Analysis.

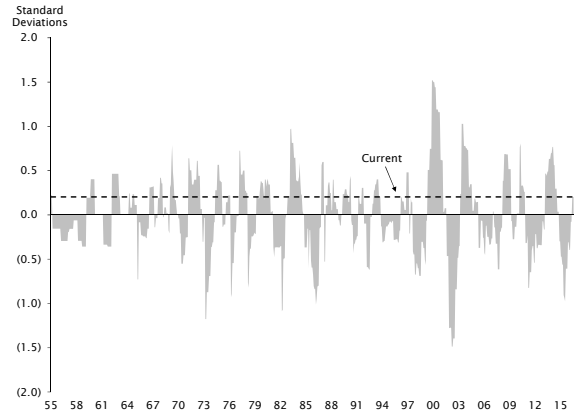
[1] Correlation is computed using capitalization-weighted monthly relative returns and the monthly percentage change in the oil price over a trailing two-year window. This cycle's peak-capex occurred in June 2014.

A Maxed Out Credit Card?

Other than a collapse in the price of oil, which is always a possibility, the other thing that could derail the improving free cash flow trajectory would be a return to the free-spending ways of the past. After the near-death experience the sector has been through that doesn't seem all that likely, particularly because the funding environment is a lot tighter. In our past research we studied the profile of energy's debt burden in some detail, with a focus on its capital markets borrowing in the form of bond issuance.[2,3] Here we'll examine their other common source of credit: bank borrowing.

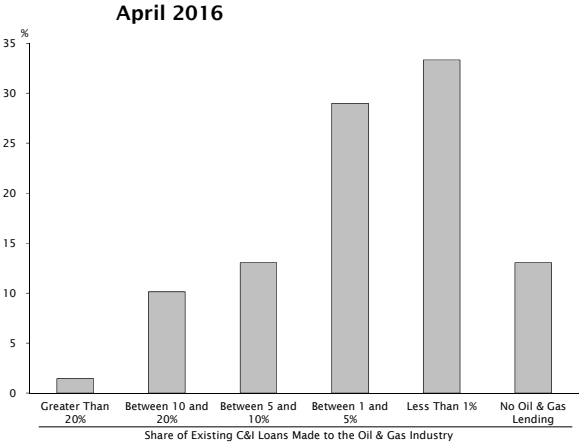
The latest Fed survey of senior loan officers at banks included a set of questions on energy exposures. Almost all of the responding banks reported some exposure, but generally their oil & gas exposure was less than 5% of their commercial and industrial loan books (see Exhibit 28). Those that do have exposure expect loan quality to deteriorate somewhat over the remainder of the year, an outcome that will surprise no one (see Exhibit 29). The response by the banks is also fairly predictable: about half the respondents reported that tightening oil & gas lending standards is "very important" to managing credit risk going forward (see Exhibit 30).

Exhibit 27: Large-Capitalization E&Ps
Median Free Cash Flow Surprise
1955 Through Late-July 2016



Source: Empirical Research Partners Analysis.

Exhibit 28: Senior Bank Loan Officers
Exposure of Existing Commercial and Industrial Loan Book to the Oil & Gas Industry
April 2016

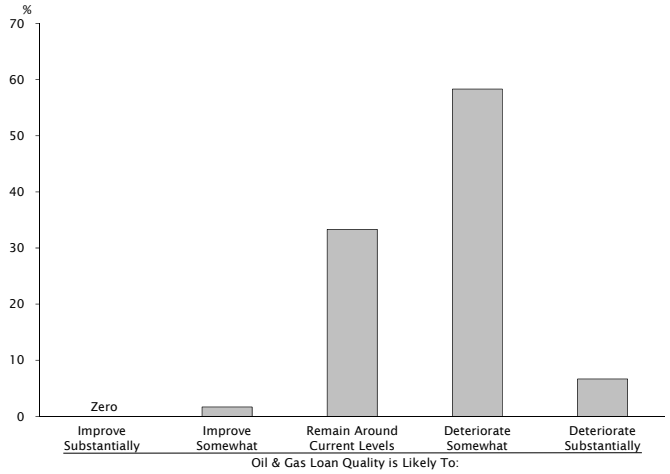


Source: Board of Governors of the Federal Reserve, May 2016. "Senior Loan Officer Opinion Survey on Bank Lending Practices."

[2] *Portfolio Strategy* March 2016. "Debtors' Prison? The Structure of U.S. Corporate Borrowing."

[3] *Portfolio Strategy* June 2016. "The Corporate Credit Cycle: Three C's for a Reason?"

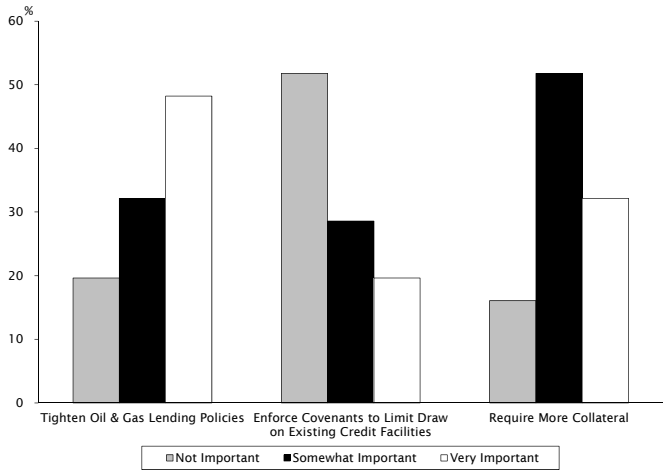
Exhibit 29: Senior Bank Loan Officers[1]
Expectations for Oil & Gas Loan Quality
for Remainder of 2016
April 2016



Source: Board of Governors of the Federal Reserve, May 2016. "Senior Loan Officer Opinion Survey on Bank Lending Practices."

[1] Subset of respondents who reported oil & gas exposure at their bank.

Exhibit 30: Senior Bank Loan Officers[1]
Actions to Mitigate Further Oil & Gas Loan Losses
April 2016

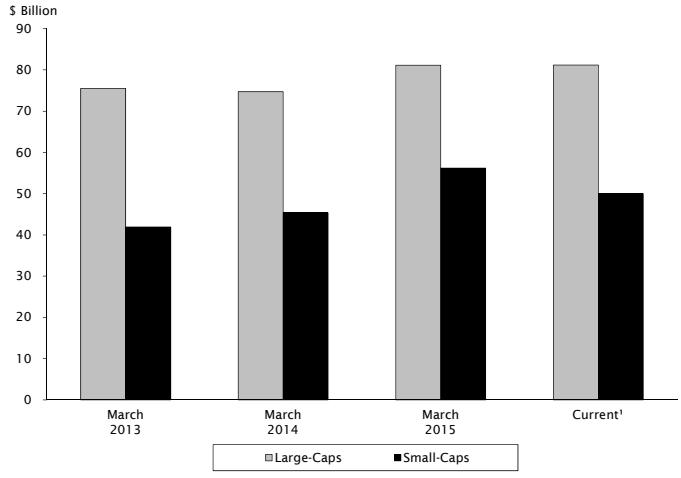


Source: Board of Govenors of the Federal Reserve, May 2016. "Senior Loan Officer Opinion Survey on Bank Lending Practices."

[1] Subset of respondents who reported oil & gas exposure at their bank.

To get some concrete data on that we looked at the borrowing base of the large- and small-cap E&P companies over the past three years (see Exhibit 31). Borrowing bases are usually reassessed twice a year and are a rough indicator of the amount of credit that can be supported by the value of an E&P company's reserves at prevailing prices. In aggregate the borrowing base for large-cap E&Ps has been flat for the past year whereas in small-caps it's down (4)% (see Exhibit 32). Neither of those moves are large considering how much the oil price has fallen, suggesting in aggregate lenders are fairly sanguine that their exposure is contained.

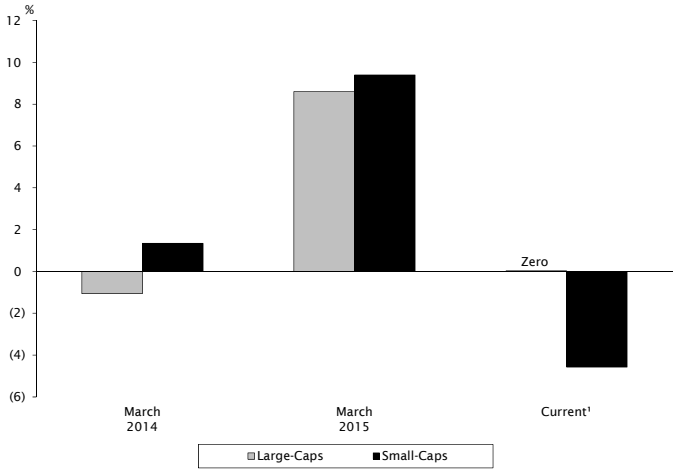
Exhibit 31: Exploration & Production Stocks
Aggregate Borrowing Base
2013 Through Late-July 2016



Source: FactSet Research Systems, Empirical Research Partners Analysis.

[1] Mostly March 2016 as most E&Ps have not yet reported 2Q 2016 results.

Exhibit 32: Exploration & Production Stocks
Year-over-Year Change in Aggregate Borrowing Base
2013 Through Late-July 2016

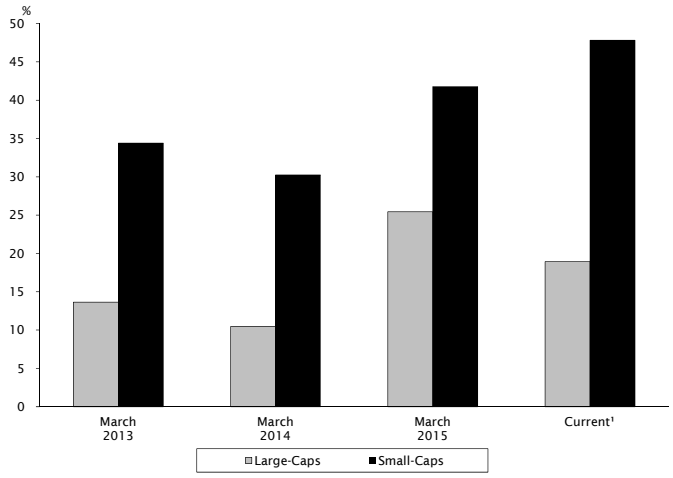


Source: FactSet Research Systems, Empirical Research Partners Analysis.

[1] Mostly March 2016 as most E&Ps have not yet reported 2Q 2016 results.

In fact, large-cap E&P companies are currently only utilizing around 15% of the borrowing capacity available in their existing credit lines (see Exhibit 33). Among small-caps the utilization rate is closer to 50%, indicative of tighter conditions for smaller players. Exhibit 34 shows that the untapped portion of existing credit lines is around the same size as 40% of the sector's total debt burden. In other words in an extreme case 40% of the total debt burden of E&Ps could be refinanced by drawing down existing credit lines. Of course in real life it's not nearly that simple; covenants and other restrictions would come into play at the company level, but back-of-the-envelope it does suggest there's still some wiggle room, particularly at the large-cap end of the market.

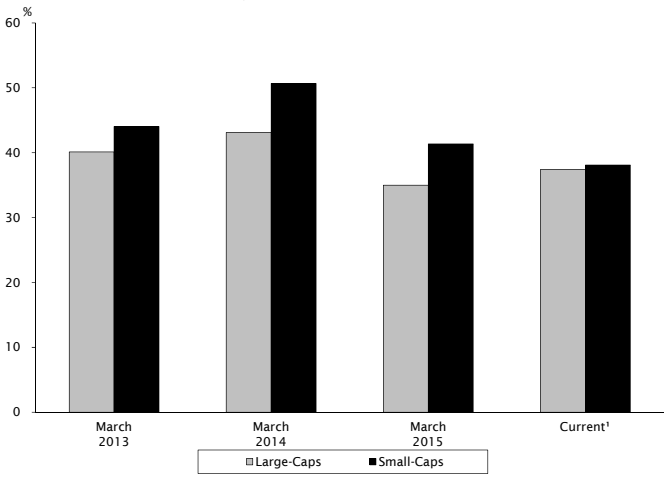
Exhibit 33: Exploration & Production Stocks
Utilization of Available Credit Lines
2013 Through Late-July 2016



Source: FactSet Research Systems, Empirical Research Partners Analysis.

¹ Mostly March 2016 as most E&Ps have not yet reported 2Q 2016 results.

Exhibit 34: Exploration & Production Stocks
Available Credit Lines as Share of Total Debt
2013 Through Late-July 2016



Source: FactSet Research Systems, Empirical Research Partners Analysis.

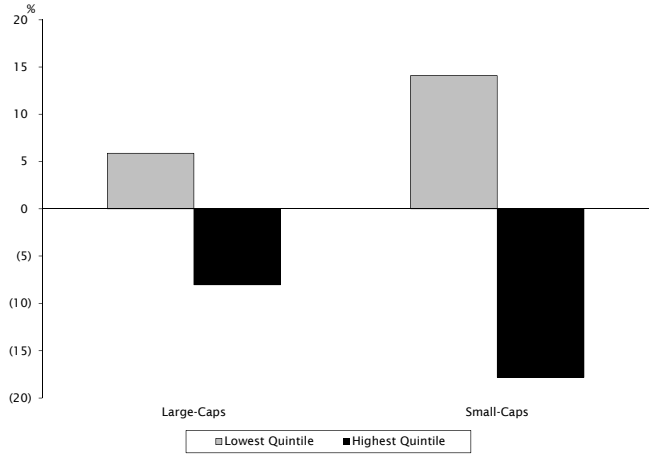
¹ Mostly March 2016 as most E&Ps have not yet reported 2Q 2016 results.

Conclusion: Drilling for Free Cash Flow

Two painful years of write-downs and spending cuts are in the history books and investors have, on cue, started to reward companies that have slashed capital spending (see Exhibit 35). Buffeted by forces they have little control over, that's the one lever the companies can pull and to their credit they've collectively pulled it even more aggressively than what they did back in the mid-1980s. That's allowed free cash flow production to become less-bad in aggregate, particularly among the E&Ps which are now topping the market in terms of positive free cash flow surprises. With the arbitrage risk of the sector still near all-time highs, the improving free cash flow position should help assuage some of the controversy in the sector.

Exhibit 36 shows the top 10 large-cap energy stocks by the size of their most recent free cash flow surprise. E&Ps, depicted as black bars in the chart, dominate the list. That's because without other downstream businesses to cushion they blow they've had to cut spending more aggressively than the integrateds (see Exhibit 37). As a result the median free cash flow surprise for E&Ps turned positive as the oil price moved up this year (see Exhibit 38). Appendix 1 on page 12 screens our large-cap energy universe on year-over-year change in capital spending and free cash flow surprises. Appendix 2 on page 13 does the same for the small-caps.

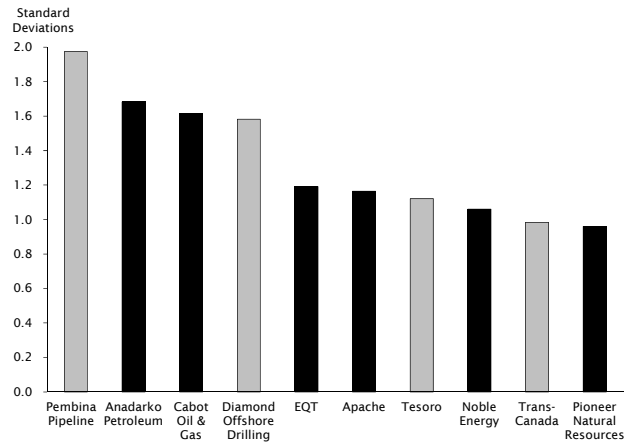
Exhibit 35: Large- and Small-Capitalization Energy Stocks
***Sector*-Relative Returns to the**
Lowest and Highest Quintiles of Capital Spending Growth¹
Monthly Data Compounded
2016 Through Late-July



Source: Empirical Research Partners Analysis.

¹ Stocks ranked within sector; equally-weighted data.

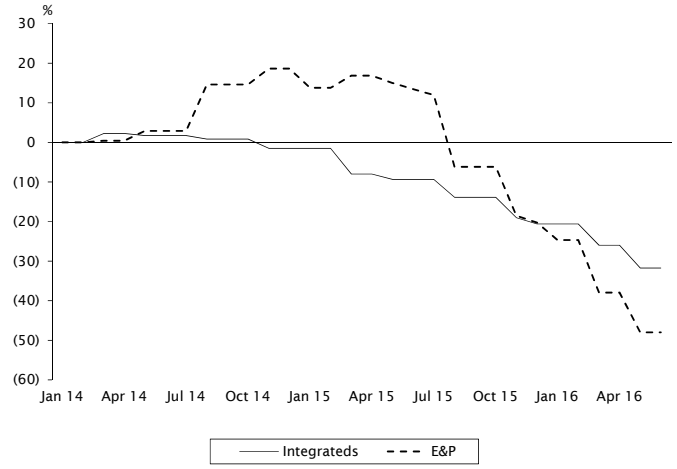
Exhibit 36: Large-Capitalization Energy Stocks¹
Top 10 By Free Cash Flow Surprise²
As of Late-July 2016



Source: Empirical Research Partners Analysis.

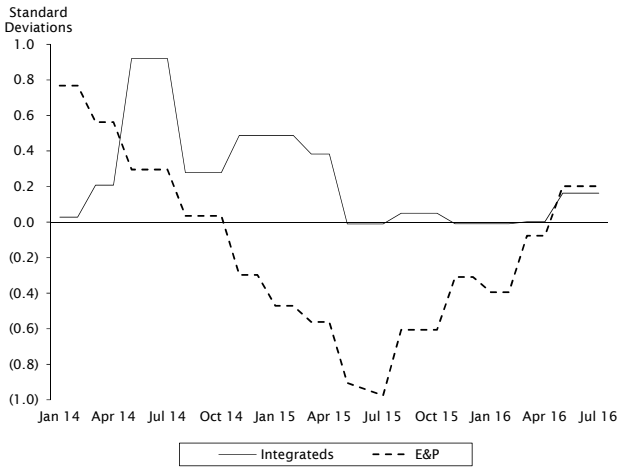
¹ E&Ps depicted in black.
² Free cash flow surprise based on comparing last reported free cash flow to the trend from the past 20 quarters, adjusted for the historical variation in that trend.

Exhibit 37: Large-Capitalization Energy Stocks
Cumulative Change in Capital Spending
2014 Through June 2016



Source: Empirical Research Partners Analysis.

Exhibit 38: Large-Capitalization Energy Stocks
Median Free Cash Flow Surprise
2014 Through Late-July 2016



Source: Empirical Research Partners Analysis.

Nobody Knows Nuttin' about oil but after a scary heart attack it's better to back the patients who are showing the will-power to stick to their diet and exercise plans. That doesn't guarantee survival of course, but at least it gives them a fighting chance. Now if you'll excuse us, there's a Pikachu running amok in our board room.

Appendix 1: Large-Capitalization Energy Stocks
Intra-Sectoral Ranking Report
Sorted by Free Cash Flow Potential and Capitalization
As of Late-July 2016

			Quintiles (1=Best; 5=Worst)									
			Free Cash Flow Potential			Super Factors						
Symbol	Company	Price	Capital Spending Growth	Free Cash Flow Surprise	**Average of The Two**	Valuation	Capital Deployment	Earnings Quality and Trend	Market Reaction	Core Model Rank	YTD Returns	Market Capitalization ($ Billion)
APA	APACHE CORP	$51.84	1	1	**1.0**	5	1	1	2	3	18.5 %	$19.6
HP	HELMERICH & PAYNE	61.15	1	1	**1.0**	3	1	2	1	1	17.2	6.6
DO	DIAMOND OFFSHRE DRILLING INC	21.79	1	1	**1.0**	1	2	3	2	1	3.3	3.0
COG	CABOT OIL & GAS CORP	23.85	2	1	**1.5**	5	4	1	3	3	35.1	11.1
OKE	ONEOK INC	44.08	2	1	**1.5**	4	3	1	1	2	86.5	9.3
OXY	OCCIDENTAL PETROLEUM CORP	73.91	2	2	**2.0**	5	2	1	3	4	11.7	56.5
TRP	TRANSCANADA CORP	45.88	3	1	**2.0**	4	2	1	1	2	43.8	36.6
ENB	ENBRIDGE INC	39.09	2	2	**2.0**	4	4	1	2	3	20.5	36.3
CNQ	CANADIAN NATURAL RESOURCES	29.81	1	3	**2.0**	2	1	5	3	2	40.1	32.7
IMO	IMPERIAL OIL LTD	30.65	1	3	**2.0**	3	1	3	3	3	(5.1)	26.0
CLR	CONTINENTAL RESOURCES INC	42.10	2	2	**2.0**	3	1	4	1	2	83.2	15.8
NBL	NOBLE ENERGY INC	35.23	3	1	**2.0**	2	4	5	2	3	7.6	15.3
ECA	ENCANA CORP	7.76	2	2	**2.0**	2	1	5	1	2	53.2	6.6
ESV	ENSCO PLC	8.79	2	2	**2.0**	1	4	1	5	1	(42.8)	2.6
CVX	CHEVRON CORP	101.79	4	1	**2.5**	3	3	5	3	4	15.8	191.8
STO	STATOIL ASA	15.84	3	2	**2.5**	2	2	2	2	1	16.0	50.8
HAL	HALLIBURTON CO	42.77	1	4	**2.5**	5	3	4	1	5	26.9	36.8
APC	ANADARKO PETROLEUM CORP	53.36	4	1	**2.5**	3	2	2	5	3	10.1	27.2
BHI	BAKER HUGHES INC	46.05	1	4	**2.5**	3	1	1	5	2	0.5	20.2
WMB	WILLIAMS COMPANIES INC	23.08	3	2	**2.5**	2	3	4	4	3	(3.9)	17.3
NOV	NATIONAL OILWELL VARCO INC	32.04	2	3	**2.5**	2	1	1	4	1	(2.8)	12.1
CVE	CENOVUS ENERGY INC	14.14	1	4	**2.5**	4	1	1	3	2	12.7	11.8
MRO	MARATHON OIL CORP	13.35	2	3	**2.5**	1	5	4	5	3	7.2	11.3
PBA	PEMBINA PIPELINE CORP	28.41	4	1	**2.5**	4	5	3	1	4	34.7	11.0
XEC	CIMAREX ENERGY CO	115.15	1	4	**2.5**	5	4	2	2	4	29.2	10.9
EEP	ENBRIDGE ENERGY PARTNERS -LP	22.45	3	2	**2.5**	3	4	4	2	4	3.3	9.7
AR	ANTERO RESOURCES CORP	25.89	3	2	**2.5**	1	3	3	3	1	18.8	7.9
CPG	CRESCENT POINT ENERGY CORP	14.45	1	4	**2.5**	1	3	3	4	1	26.7	7.3
FTI	FMC TECHNOLOGIES INC	25.39	1	4	**2.5**	2	1	5	5	2	(12.5)	5.7
HFC	HOLLYFRONTIER CORP	24.62	4	1	**2.5**	1	4	4	5	1	(36.9)	4.3
XOM	EXXON MOBIL CORP	90.20	3	3	**3.0**	4	3	3	3	4	17.8	374.0
TOT	TOTAL SA	47.36	3	3	**3.0**	2	2	3	2	2	8.0	117.9
BP	BP PLC	33.99	4	2	**3.0**	2	2	2	3	1	13.1	106.4
COP	CONOCOPHILLIPS	40.26	3	3	**3.0**	2	1	3	5	3	(12.1)	49.9
PXD	PIONEER NATURAL RESOURCES CO	157.54	4	2	**3.0**	4	4	1	5	3	25.7	26.6
VLO	VALERO ENERGY CORP	51.87	2	4	**3.0**	1	1	5	4	1	(25.1)	24.4
EQT	EQT CORP	73.91	5	1	**3.0**	3	3	4	4	4	41.9	12.8
TSO	TESORO CORP	75.78	5	1	**3.0**	1	1	2	4	1	(27.2)	9.1
RRC	RANGE RESOURCES CORP	40.75	2	4	**3.0**	4	3	3	1	4	65.8	6.9
WFT	WEATHERFORD INTERNATIONAL LTD	5.72	1	5	**3.0**	5	4	2	5	4	(31.8)	5.1

Source: Empirical Research Partners Analysis.

Appendix 1 (cont.): Large-Capitalization Energy Stocks
Intra-Sectoral Ranking Report
Sorted by Free Cash Flow Potential and Capitalization
As of Late-July 2016

			Quintiles (1=Best; 5=Worst)										
			Free Cash Flow Potential			Super Factors							
Symbol	Company	Price	Capital Spending Growth	Free Cash Flow Surprise	**Average of The Two**	Valuation	Capital Deployment	Earnings Quality and Trend	Market Reaction	Core Model Rank	YTD Returns	Market Capitalization ($ Billion)
CHK	CHESAPEAKE ENERGY CORP	$5.19	1	5	**3.0**	2	3	4	2	2	15.3 %	$3.7
SU	SUNCOR ENERGY INC	26.71	4	3	**3.5**	4	5	4	3	5	5.3	44.4
EOG	EOG RESOURCES INC	79.90	3	4	**3.5**	4	2	3	4	4	13.6	44.0
PSX	PHILLIPS 66	76.25	5	2	**3.5**	2	5	4	4	3	(5.3)	40.1
CXO	CONCHO RESOURCES INC	119.66	5	2	**3.5**	4	4	1	3	4	28.9	15.7
CLB	CORE LABORATORIES NV	116.46	2	5	**3.5**	5	2	5	2	5	8.7	5.1
CCJ	CAMECO CORP	9.50	2	5	**3.5**	4	2	3	5	4	(21.9)	3.8
SLB	SCHLUMBERGER LTD	79.05	3	5	**4.0**	5	3	5	4	5	14.9	110.0
KMI	KINDER MORGAN INC	20.22	4	4	**4.0**	3	4	2	4	3	38.4	45.1
MPC	MARATHON PETROLEUM CORP	38.17	5	3	**4.0**	1	4	4	4	1	(25.0)	20.2
DVN	DEVON ENERGY CORP	36.13	3	5	**4.0**	3	5	2	4	3	14.2	18.9
HES	HESS CORP	52.17	4	4	**4.0**	1	2	2	4	2	8.6	16.5
LNG	CHENIERE ENERGY INC	41.50	5	3	**4.0**	5	5	5	1	5	11.4	9.8
NFX	NEWFIELD EXPLORATION CO	42.38	5	3	**4.0**	5	5	4	2	5	30.2	8.4
FANG	DIAMONDBACK ENERGY INC	85.93	5	3	**4.0**	4	5	1	3	4	28.4	6.6
RDS.A	ROYAL DUTCH SHELL PLC	52.35	4	5	**4.5**	2	5	5	2	4	18.2	213.5
E	ENI SPA	30.53	4	5	**4.5**	3	3	2	2	1	4.7	55.1
SWN	SOUTHWESTERN ENERGY CO	14.46	4	5	**4.5**	3	2	2	1	2	103.4	7.1
TRGP	TARGA RESOURCES CORP	37.18	5	4	**4.5**	1	5	2	1	1	46.2	6.1
MUR	MURPHY OIL CORP	26.57	4	5	**4.5**	1	2	5	1	2	22.3	4.6
RIG	TRANSOCEAN LTD	10.74	5	4	**4.5**	1	4	3	5	1	(13.2)	3.9
SE	SPECTRA ENERGY CORP	36.09	5	5	**5.0**	5	5	4	1	5	54.9	25.2

Source: Empirical Research Partners Analysis.

Appendix 2: Small-Capitalization Energy Stocks[1]
Intra-Sectoral Ranking Report
Sorted by Free Cash Flow Potential and Capitalization
As of Late-July 2016

			Quintiles (1=Best; 5=Worst)										
			Free Cash Flow Potential			Super Factors							
Symbol	Company	Price	Capital Spending Growth	Free Cash Flow Surprise	**Average of The Two**	Valuation	Capital Deployment	Earnings Quality and Trend	Market Reaction	Core Model Rank	YTD Returns	Market Capitalization ($ Million)
RDC	ROWAN COMPANIES PLC	$15.03	1	1	**1.0**	1	1	1	4	**1**	(11.3) %	$1,886
GLNG	GOLAR LNG LTD	16.82	1	1	**1.0**	5	4	5	4	**5**	7.1	1,565
SDRL	SEADRILL LTD	3.00	1	1	**1.0**	2	1	3	4	**1**	(11.5)	1,525
GLOG	GASLOG LTD	13.12	1	1	**1.0**	3	2	2	1	**1**	62.0	1,056
STNG	SCORPIO TANKERS INC	4.78	1	1	**1.0**	2	2	1	5	**1**	(37.7)	827
GTE	GRAN TIERRA ENERGY INC	2.71	1	1	**1.0**	3	3	3	2	**1**	24.9	803
AROC	ARCHROCK INC	8.82	1	1	**1.0**	3	2	5	1	**1**	23.3	614
DO	DIAMOND OFFSHRE DRILLING INC	21.79	2	1	**1.5**	2	3	4	2	**1**	3.3	2,989
PTEN	PATTERSON-UTI ENERGY INC	19.26	2	1	**1.5**	4	3	3	1	**1**	28.6	2,838
NBR	NABORS INDUSTRIES LTD	8.97	2	1	**1.5**	3	1	3	2	**1**	6.8	2,530
IOC	INTEROIL CORP	49.30	2	1	**1.5**	5	4	5	2	**5**	56.9	2,463
PDS	PRECISION DRILLING CORP	4.23	1	2	**1.5**	4	1	4	2	**1**	7.4	1,240
PGH	PENGROWTH ENERGY CORP	1.46	1	2	**1.5**	1	1	4	2	**1**	99.1	805
ERN	ERIN ENERGY CORP	2.55	2	1	**1.5**	5	3	2	5	**4**	(20.3)	541
CRC	CALIFORNIA RESOURCES CORP	9.94	1	2	**1.5**	2	1	3	5	**1**	(57.3)	387
NGS	NATURAL GAS SERVICES GROUP	24.25	1	2	**1.5**	4	1	1	1	**1**	8.7	312
ESV	ENSCO PLC	8.79	2	2	**2.0**	1	5	2	5	**1**	(42.8)	2,649
LPI	LAREDO PETROLEUM INC	9.52	2	2	**2.0**	5	3	1	4	**3**	19.1	2,287
FI	FRANK'S INTL NV	12.37	1	3	**2.0**	5	1	4	3	**2**	(24.4)	1,922
DK	DELEK US HOLDINGS INC	11.98	3	1	**2.0**	1	3	5	5	**2**	(50.3)	743
UNT	UNIT CORP	12.06	2	2	**2.0**	3	4	4	1	**1**	(1.1)	620
TK	TEEKAY CORP	6.08	3	1	**2.0**	2	4	1	5	**1**	(37.1)	443
UPLMQ	ULTRA PETROLEUM CORP	1.97	1	3	**2.0**	2	1	3	3	**1**	(21.2)	302
PBF	PBF ENERGY INC	21.79	3	2	**2.5**	3	4	4	4	**1**	(39.5)	2,131
WLL	WHITING PETROLEUM CORP	6.84	4	1	**2.5**	1	4	3	4	**1**	(27.5)	1,884
CRZO	CARRIZO OIL & GAS INC	31.71	4	1	**2.5**	5	5	1	3	**3**	7.2	1,864
SM	SM ENERGY CO	25.88	3	2	**2.5**	1	3	2	3	**1**	31.9	1,762
NE	NOBLE CORP PLC	7.24	2	3	**2.5**	1	1	3	5	**1**	(29.8)	1,761
EURN	EURONAV	8.64	3	2	**2.5**	2	1	1	3	**1**	(31.9)	1,372
AAV	ADVANTAGE OIL & GAS LTD	6.24	3	2	**2.5**	3	4	4	4	**3**	22.8	1,151
HLX	HELIX ENERGY SOLUTIONS GROUP	7.66	1	4	**2.5**	4	2	2	2	**1**	45.6	863
ECR	ECLIPSE RESOURCES CORP	2.89	2	3	**2.5**	4	2	1	1	**2**	58.8	753
TTI	TETRA TECHNOLOGIES INC/DE	5.82	2	3	**2.5**	4	2	2	1	**1**	(22.6)	535
CWEI	CLAYTON WILLIAMS ENERGY INC	35.00	1	4	**2.5**	3	1	4	2	**2**	18.4	426
SN	SANCHEZ ENERGY CORP	6.04	1	4	**2.5**	3	3	1	3	**1**	40.1	394
ANW	AEGEAN MARINE PETROLM NETWK	6.38	1	4	**2.5**	1	1	2	3	**1**	(23.2)	319

Source: Empirical Research Partners Analysis.

[1] Limited to companies with market capitalization between $300 million and $3 billion.

Appendix 2 (cont.): Small-Capitalization Energy Stocks[1]
Intra-Sectoral Ranking Report
Sorted by Free Cash Flow Potential and Capitalization
As of Late-July 2016

			Quintiles (1=Best; 5=Worst)										
			Free Cash Flow Potential			Super Factors							
Symbol	Company	Price	Capital Spending Growth	Free Cash Flow Surprise	**Average of The Two**	Valuation	Capital Deployment	Earnings Quality and Trend	Market Reaction	Core Model Rank	YTD Returns	Market Capitalization ($ Million)
CPE	CALLON PETROLEUM CO/DE	$11.10	5	1	**3.0**	5	5	4	1	**4**	33.1 %	$1,455
SFL	SHIP FINANCE INTL LTD	14.91	4	2	**3.0**	3	5	1	3	**1**	(4.3)	1,394
FET	FORUM ENERGY TECH INC	15.09	2	4	**3.0**	5	2	2	2	**2**	21.1	1,377
PWE	PENN WEST PETROLEUM LTD	1.24	2	4	**3.0**	2	1	1	1	**1**	48.3	623
CIE	COBALT INTL ENERGY INC	1.35	3	3	**3.0**	4	3	1	5	**3**	(75.0)	560
REI	RING ENERGY INC	7.67	5	1	**3.0**	4	5	5	3	**5**	8.8	321
ENLC	ENLINK MIDSTREAM LLC	15.09	3	4	**3.5**	3	4	4	2	**1**	5.6	2,717
OII	OCEANEERING INTERNATIONAL	27.66	3	4	**3.5**	3	1	2	5	**1**	(24.9)	2,712
SPN	SUPERIOR ENERGY SERVICES INC	15.91	2	5	**3.5**	5	2	2	2	**2**	19.1	2,414
SLCA	U S SILICA HOLDINGS INC	34.40	2	5	**3.5**	5	5	5	1	**5**	84.6	2,184
MTDR	MATADOR RESOURCES CO	20.30	4	3	**3.5**	5	5	3	4	**5**	2.7	1,894
CZZ	COSAN LTD	6.44	5	2	**3.5**	3	5	3	1	**1**	77.3	1,705
OIS	OIL STATES INTL INC	30.18	4	3	**3.5**	5	2	4	3	**3**	10.8	1,550
SEMG	SEMGROUP CORP	29.17	5	2	**3.5**	4	5	2	4	**3**	4.8	1,541
OAS	OASIS PETROLEUM INC	7.25	2	5	**3.5**	1	4	4	3	**1**	(1.6)	1,309
MDR	MCDERMOTT INTERNATIONAL INC	5.12	4	3	**3.5**	4	3	1	1	**1**	52.8	1,232
NVGS	NAVIGATOR HOLDINGS LTD	9.52	4	3	**3.5**	1	4	1	5	**1**	(30.3)	528
NR	NEWPARK RESOURCES	5.73	3	4	**3.5**	4	3	3	2	**1**	8.5	482
ALJ	ALON USA ENERGY INC	6.57	5	2	**3.5**	2	3	5	4	**1**	(54.3)	468
TNP	TSAKOS ENERGY NAVIGATION LTD	5.13	4	3	**3.5**	2	3	4	4	**1**	(34.4)	442
REGI	RENEWABLE ENERGY GROUP INC	9.38	4	3	**3.5**	1	4	4	2	**1**	1.0	410
LPG	DORIAN LPG LTD	6.11	5	2	**3.5**	1	5	2	4	**1**	(48.1)	343
PHIIK	PHI INC	19.41	2	5	**3.5**	2	1	4	2	**1**	18.3	305
PDCE	PDC ENERGY INC	52.74	5	3	**4.0**	2	4	2	4	**2**	(1.2)	2,443
KOS	KOSMOS ENERGY LTD	5.48	5	3	**4.0**	3	4	5	5	**4**	5.4	2,111
DRQ	DRIL-QUIP INC	55.37	3	5	**4.0**	4	1	4	4	**2**	(6.5)	2,102
ERF	ENERPLUS CORP	5.76	3	5	**4.0**	4	2	2	2	**1**	72.3	1,384
FMSA	FAIRMOUNT SANTROL HOLDINGS	6.53	3	5	**4.0**	5	2	3	1	**3**	177.9	1,225
DNR	DENBURY RESOURCES INC	2.94	3	5	**4.0**	1	1	5	1	**1**	45.5	1,031
EPE	EP ENERGY CORP	3.87	4	4	**4.0**	1	2	2	1	**1**	(11.6)	978
BTE	BAYTEX ENERGY CORP	4.42	3	5	**4.0**	2	2	5	2	**1**	36.4	931
ATW	ATWOOD OCEANICS	10.53	3	5	**4.0**	1	3	2	2	**1**	3.7	682
TNK	TEEKAY TANKERS LTD	2.91	5	3	**4.0**	1	5	1	5	**1**	(55.5)	455
GNRT	GENER8 MARITIME INC	5.37	5	3	**4.0**	2	5	3	3	**2**	(43.2)	444
MTRX	MATRIX SERVICE CO	16.60	4	4	**4.0**	4	2	5	3	**2**	(19.2)	442
DHT	DHT HOLDINGS INC	4.67	5	3	**4.0**	1	3	1	5	**1**	(37.2)	436
BRS	BRISTOW GROUP INC	10.88	3	5	**4.0**	2	4	5	4	**1**	(57.6)	381
XCO	EXCO RESOURCES INC	1.33	4	4	**4.0**	4	2	3	1	**2**	7.3	377
CLNE	CLEAN ENERGY FUELS CORP	3.02	4	4	**4.0**	5	3	1	4	**4**	(16.1)	361
WNR	WESTERN REFINING INC	20.46	5	4	**4.5**	1	2	3	5	**1**	(40.0)	1,868
CVI	CVR ENERGY INC	14.24	4	5	**4.5**	2	2	4	5	**1**	(62.1)	1,236
NAT	NORDIC AMERICAN TANKERS LTD	12.19	5	4	**4.5**	3	5	1	3	**2**	(16.6)	1,089
CKH	SEACOR HOLDINGS INC	55.93	5	4	**4.5**	4	4	3	3	**2**	6.4	968
GPRE	GREEN PLAINS INC	22.99	4	5	**4.5**	5	4	3	1	**2**	1.9	884
PARR	PAR PACIFIC HOLDINGS INC	14.85	4	5	**4.5**	5	5	5	4	**5**	(36.9)	610
SYRG	SYNERGY RESOURCES CORP	6.20	5	5	**5.0**	3	5	5	5	**5**	(27.2)	1,243
REX	REX AMERICAN RESOURCES CORP	64.87	5	5	**5.0**	4	3	5	1	**1**	20.0	426

Source: Empirical Research Partners Analysis.

[1] Limited to companies with market capitalization between $300 million and $3 billion.