A slick Oil and Gas Model

Research Signals

The Oil and Gas industry is the second largest industry in the world by market capitalization. It includes companies in exploration, production, refining and distribution. Given its scope, the identification of the forces that drive industry stock prices is essential to a comprehensive investment process. Here we expand our set of Oil and Gas measures (Industry focus: Oil and Gas January 2012) to introduce a model that builds on the unique analytical attributes of companies in this industry. The Oil and Gas model utilizes industry-specific data alongside industry-recognized fundamental measures to provide a comprehensive scoring system capturing the distinct characteristics of firms in this sector. Our empirical results reveal significant monthly average return spreads of 1.49% that persist out to a 12-month cumulative (overlapping periods) average of 12.31%.

Introduction

Our industry-leading resource of stock selection metrics and models extends beyond value, growth, liquidity, momentum and risk measures to several industry-specific factor suites including REITs, Banks and Thrifts, Retailers, and Semiconductors, among others. In this report, we introduce a model specifically for the Oil and Gas segment of the market designed to systematically value firms in this sector with a multifactor strategy that achieves both fundamental appeal and strong performance.

The Oil and Gas Model expands on the industry factor suite which utilizes operating metric details capturing key idiosyncrasies related to Oil and Gas companies beyond the universal set of standardized financial statement items available across all industries. It builds upon exclusive corporate detail to provide a systematic evaluation process encompassing reserve metrics such as Reserve-Replacement Ratio as well as measures of operating efficiency including Relative Net Income-to-Wells, among others (Industry focus: Oil and Gas January 2012).

Building upon this base, in this report we introduce our Oil and Gas multifactor model. We begin with a review of the Oil and Gas Model construction and analytics of its components. Next, we present performance statistics and robustness checks for the model. We round out the presentation with company-specific detail.

Model definition

The Oil and Gas Model is a comprehensive scoring system that systematically values companies utilizing metrics covered by industry analysts in their due diligence of the Oil and Gas sector. This is accomplished by using industry-specific data such as production numbers and reserve amounts (e.g., Production Growth and Reserve-Replacement Ratio), offering a finer assessment of company performance and operating condition than items available for all

Contacts

Research Signals · MK-ResearchSignals@ihsmarkit.com

IHS Markit™

industries, as well as looking at industry-recognized metrics to gather a holistic view of a company. The metrics selected to construct our model are organized into a multifactor methodology that encompasses four broad investment styles:

- Management Quality 30%

- Growth 20%

- Value 30%

- Momentum & Sentiment 20%

Employing the viewpoint of an Oil and Gas analyst, we focus the majority of the weight on fundamental measures, with quality and valuation receiving the highest weights of 30% each, and growth receiving 20% weight. The remaining 20% of the model weight is assigned to Momentum & Sentiment. Within this group, we assign heavier weighting to the more predictive, faster moving signals and better indicators of future outperformance.

Management Quality

Management quality is the assessment of the decisions made by management and how their decisions shape the profitability of the firm. This is especially true for the Oil and Gas industry, where skill in managing the pipeline is critical for profitability. Industry analysts look at metrics such as capital expenditure, depreciation, and return on capital to ensure that companies are paving the way for the future by undertaking profitable projects as well as maintaining good accounting in the process.

The factors used to examine Management Quality are Capital Expenditures to Depreciation, Relative Net Income-to-Wells and Free Cash Flow Return on Invested Capital. Capital expenditures and depreciation are typically very high for oil and gas companies due to costs relating to the acquisition, exploration and development of new oil and natural gas reserves. An attractive company is willing to spend enough on new equipment and exploration in order to offset the depreciation of long-lived operating equipment and the depletion costs associated with property/property mineral rights acquisition.

Looking at income per well is another measure of management quality. To remove the inherent large company bias within the base value, we calculate our final score by standardizing the results relative to a peer group. Peer groups are defined based on well counts as those with less than 500, between 500 and 5000 and greater than 5000. Standardization within the respective group is computed by subtracting the group mean and dividing by the group standard deviation.

Free Cash Flow Return on Invested Capital identifies the economic return a company generates. We remark that we avoid the direct use of earnings and revenues from our model as, in general, oil and gas companies have unique tax situations, heavy depreciation, and relatively large impairment charges and write-downs.

Growth

Another characteristic to consider when analyzing oil and gas companies is the rate and sustainability of production growth. Here we focus on industry specific measures of growth - Production Growth and Reserve-Replacement Ratio. Production Growth measures the change in production figures year-over-year. A higher growth rate means that more reserves are being utilized and extracted. To counterbalance production growth, we need to monitor the rate at which reserves are being replaced.

Reserve-Replacement Ratio monitors the amount of reserves added scaled by the annual production. It is computed as the amount of proved reserves for all combustibles added to a firm's reserve base during the latest fiscal year relative to

the amount of oil and gas produced. High production growth with a reserve replacement ratio above one means that the production growth is sustainable as more reserves are being added than being utilized.

Value

In addition to high quality and sustainable growth, we look for attractive valuations. To gauge Value, we look at TTM Operating Income to Enterprise Value, TTM Cash Flow to Price and TTM Dividend Yield. TTM Operating Income to Enterprise Value looks at the most recent operating income number before depreciation and amortization scaled by enterprise value. This metric is preferred over an EV/EBITDA metric, as it removes one-time, non-recurring gains/charges from the earnings.

The TTM Cash Flow to Price factor adds back depreciation and amortization to the trailing twelve month net income figure, removing the effect of depreciation policies on earnings.

Lastly, oil and gas companies are historically good sources of dividend yield, thus we include dividend yield to identify those companies providing dividend income at the best value.

Momentum & Sentiment

While the three previous sub-modules focus on the fundamental characteristics of oil and gas companies, we include momentum and sentiment factors, which combine price changes and risk with sentiment from analysts and the securities lending market, to gauge technical strength and opinions of other market participants. The factors we selected have not only performed well over this universe and have low correlation with the other styles, but also make sense when considering a thorough analysis of investing in a company at its current levels. These signals also tend to be faster moving than the traditional fundamental signals, allowing for more sensitive rankings over time by taking into account earnings revisions, borrowing costs and price action. Measures include Implied Loan Rate, Net # of Revisions for Fiscal Year 1, Rational Decay Alpha and 24-Month Residual Return Variance.

Within the securities lending market, short sellers face significant hurdles to successful strategy execution due to market frictions, such as the unavailability of shares to be borrowed, search costs involved in finding a stock lender and high borrowing costs. A security could have high borrowing costs due to high shorting demand or low supply. Implied Loan Rate measures the cost of borrowing a particular stock and is indicative of the shorting flow data. A high rate implies more negative sentiment for a stock.

The focus of earnings momentum is equity analyst estimates and their changing nature over time. Net # of Revisions for Fiscal Year 1 measures the sentiment of analysts regarding a company's current fiscal year earnings. It is a good proxy for isolating pre-earnings momentum stocks and stocks with changing earnings expectations.

Rational Decay Alpha is a price momentum measure that uses a proprietary rational decay function to smooth monthly returns by placing more weight on older returns and less on more recent returns. This method improves factor stability and reduces the impact of short-term reversals.

Finally, the variance of a stock's residual returns over the previous 24 months isolates stocks with a large amount of volatility. Residual returns are calculated as the excess return beyond the beta-adjusted predicted return. Our model construction favors names with more stable residual return series.

Data and methodology

Oil and Gas Model scores are analyzed on a global basis for companies in the Oil and Gas industry. Figure 1 displays the trend in coverage from January 2008 through August 2013 which ranges from approximately 450 names in 2008 to

over 550 names by August 2013. In this report, our constituent list is based upon names with adequate data availability. The overall coverage is 80% or better of the full Oil and Gas industry constituents.
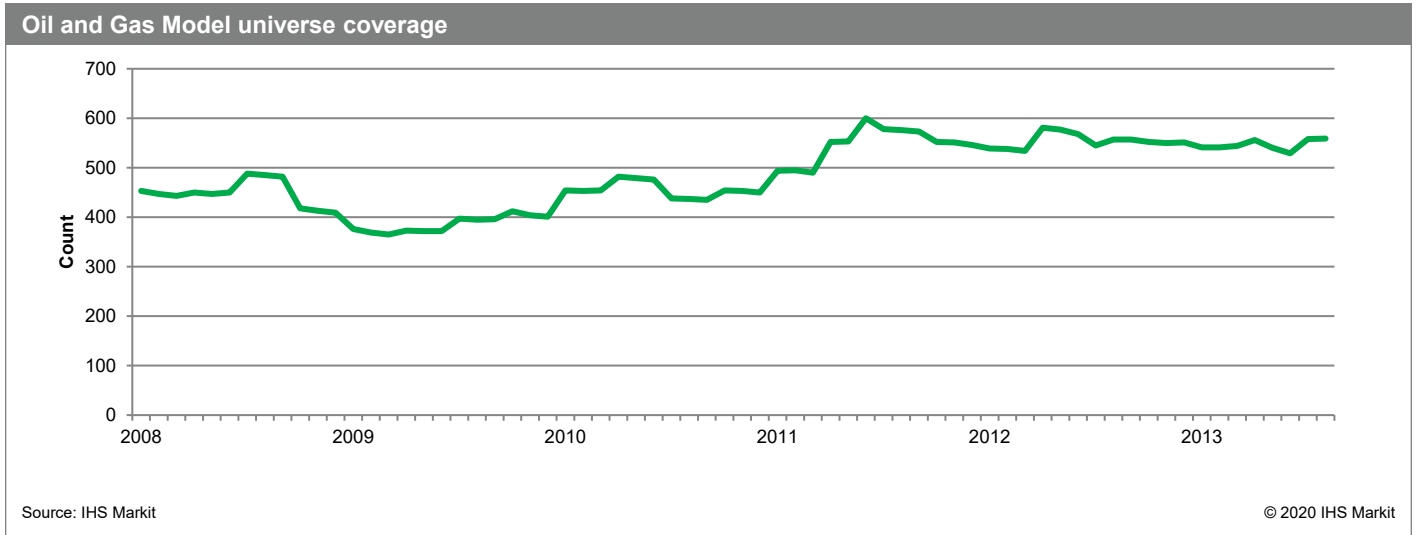
Figure 1

Oil and Gas Model universe coverage

Source: IHS Markit   © 2020 IHS Markit
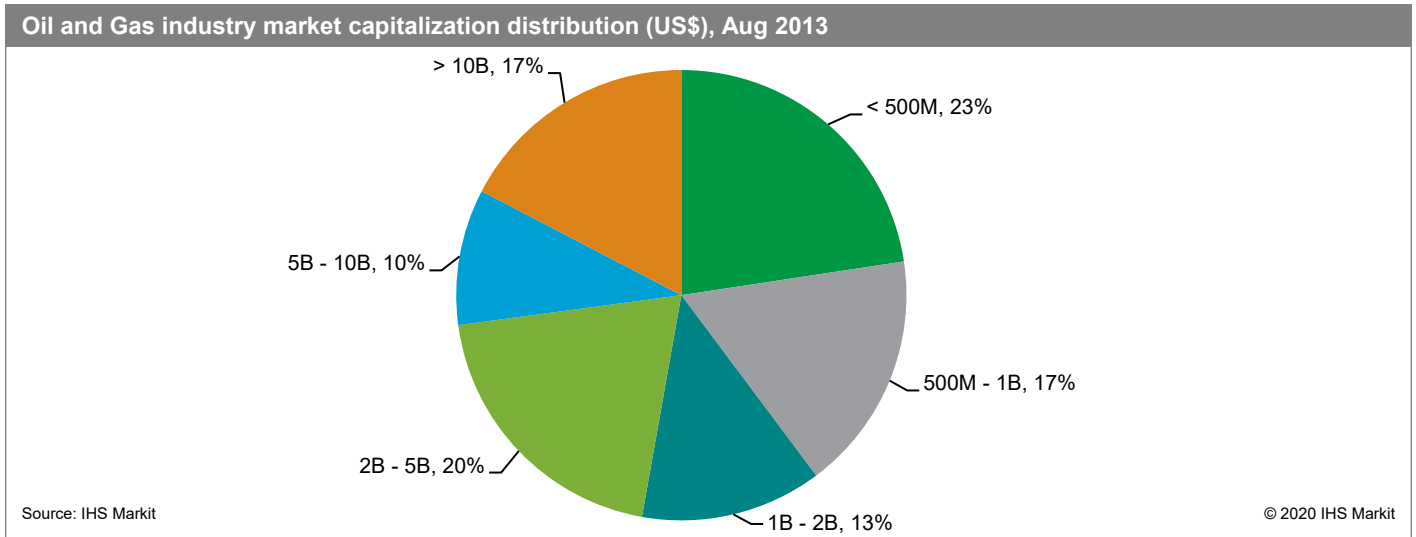
Figure 2 presents the equal-weight average geographic breakout for the universe in August 2013. Our test universe includes developed markets in Europe, Pacific and North America, as well as emerging markets in Europe, Middle East and Africa (EMEA), Asia and Latin America. North America (42%) comprises the majority of the universe but other regions increased recently, including Developed Europe (19%) and Pacific (12%).

Figure 2

Oil and Gas industry geographic distribution, Aug 2013

Source: IHS Markit   © 2020 IHS Markit
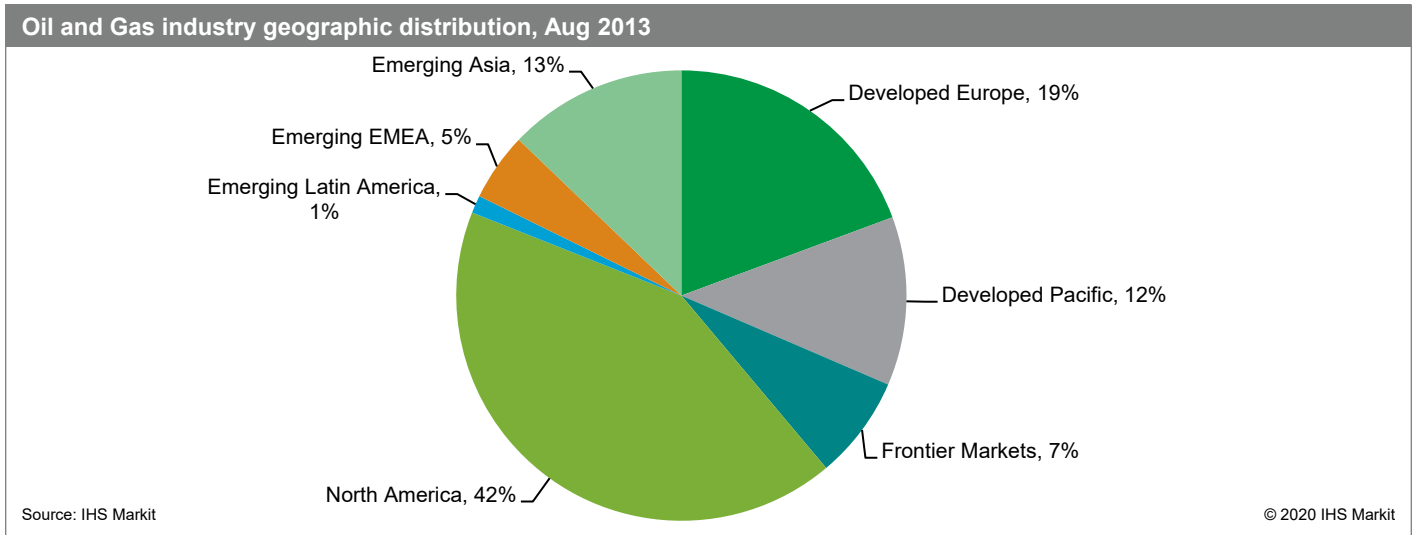
Distributions by market cap group (US $) for the same period are displayed in Figure 3. The smaller capitalization segment (< $1B), at 40%, has increased the most in coverage recently at the expense of the mega capitalization stocks (>$10B), which stand at 17% of the distribution.

Figure 3

Oil and Gas industry market capitalization distribution (US$), Aug 2013

> 10B, 17%
< 500M, 23%
5B - 10B, 10%
500M - 1B, 17%
2B - 5B, 20%
1B - 2B, 13%

Source: IHS Markit
© 2020 IHS Markit

We utilize many performance statistics to quantify factor efficacy. Included is the information coefficient (IC) which is a Spearman rank correlation between factor ranks (percentile) and subsequent returns measuring the cross-sectional predictive power of the signal. We also report quintile spread-based statistics which refer to the difference between average returns for top-ranked (Q1) and bottom-ranked (Q5) stocks. Robustness statistics include the information ratio (IR), gauging the signal-to-noise ratio computed as the average divided by the standard deviation, along with the hit rate, capturing the percent of months with positive observations.

Here we report summary results in local currency from January 2008 through August 2013, as that contains full factor coverage. Note that earlier period performance data is available on the Research Signals Platform.

Results

First, we analyze the individual components of the Oil and Gas Model to demonstrate the robustness of the construction. Monthly return spread results over the test period are presented in Table 1. We report the average, standard deviation (Std Dev), IR and hit rate. Sub-composite results are listed in the Appendix (see Table A1).

We observe positive returns on average to all metrics with the exception of Relative Net Income-To-Wells, although in this case, the return spread is only moderately negative (-0.55%). Top returns were posted by Implied Loan Rate (1.25%), with a hit rate of 66%, followed by TTM Operating Income to Enterprise Value (1.16%), which also featured an above average hit rate (68%). Net # of Revisions for Fiscal Year 1 (Average: 0.98%; hit rate: 71%) and Capital Expenditures to Depreciation (Average: 0.93%; hit rate 66%) also recorded robust results.

Next, we consider the 1-month return spread correlations of the individual measures (Table 2). Sub-composite results are listed in the Appendix (see Table A2). Overall, we remark that the pair-wise correlations are modest in general which is ideal for a multi-factor framework. The lowest absolute co-linearities are associated with Rational Decay Alpha and Production Growth. While Free Cash Flow Return on Invested Capital and TTM Dividend Yield recorded a relatively high correlation (0.75), the former also displays strong negative correlations with Implied Loan Rate (-0.67), Net # of Revisions for Fiscal Year 1 (-0.28) and Reserve-Replacement Ratio (-0.26).

Table 1

Oil and Gas factor 1-month return spreads, Jan 2008 - Aug 2013

		Average	Std dev	IR	Hit rate
Quality	Capital Expenditures to Depreciation	0.93%	3.13	0.30	66%
	Relative Net Income-to-Wells	-0.53%	5.96	-0.09	50%
	Free Cash Flow Return on Invested Capital	0.52%	4.05	0.13	56%
Growth	Production Growth	0.87%	3.04	0.29	63%
	Reserve-Replacement Ratio	0.16%	3.16	0.05	56%
Value	TTM Operating Income to Enterprise Value	1.16%	1.98	0.59	68%
	TTM Cash Flow-to-Price	0.97%	2.43	0.40	63%
	TTM Dividend Yield	0.91%	3.95	0.23	57%
Momentum & Sentiment	Implied Loan Rate	1.25%	4.01	0.31	66%
	Net # of Revisions for Fiscal Year 1	0.98%	2.71	0.36	71%
	Rational Decay Alpha	0.13%	3.85	0.03	62%
	24-Month Residual Return Variance	0.72%	5.19	0.14	59%

Source: IHS Markit

Table 2

Oil and Gas factor 1-month return spread correlations, Jan 2008 - Aug 2013

		Quality			Growth		Value			Momentum & Sentiment			
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Quality	Capital Expenditures to Depreciation (F1)	1											
	Relative Net Income-to-Wells (F2)	-0.47	1										
	Free Cash Flow Return on Invested Capital (F3)	-0.52	0.64	1									
Growth	Production Growth (F4)	0.12	-0.22	-0.17	1								
	Reserve-Replacement Ratio (F5)	0.19	-0.33	-0.26	0.14	1							
Value	TTM Operating Income to Enterprise Value (F6)	0.26	-0.10	-0.06	-0.03	0.17	1						
	TTM Cash Flow-to-Price (F7)	-0.11	0.20	0.23	-0.23	0.08	0.58	1					
	TTM Dividend Yield (F8)	-0.36	0.56	0.75	-0.30	-0.17	0.04	0.35	1				
Momentum & Sentiment	Implied Loan Rate (F9)	0.54	-0.52	-0.67	0.20	0.32	0.42	0.13	-0.53	1			
	Net # of Revisions for Fiscal Year 1 (F10)	0.34	-0.09	-0.28	0.15	-0.05	-0.19	-0.43	-0.29	0.10	1		
	Rational Decay Alpha (F11)	0.17	0.01	-0.13	-0.02	0.21	0.13	0.07	-0.15	0.21	-0.07	1	
	24-Month Residual Return Variance (F12)	-0.12	0.46	0.57	-0.13	-0.13	-0.06	0.10	0.73	-0.34	0.06	-0.09	1

Source: IHS Markit

Having illustrated the desirable multi-factor construction of the model, we now proceed to detail model performance. Figure 4 displays average IC results for the Oil and Gas Model over cumulative holding periods for 1, 3, 6 and 12 months. The accompanying quintile spread performance results are listed in Table 3, including the average, standard deviation (Std dev), IR and hit rate, again ranging from 1- to 12-month (cumulative) holding periods. Time series of 1-month ICs and spreads are displayed in the Appendix (see Figures A1 and A2, respectively).

Figure 4

Oil and Gas Model ICs, Jan 2008 - Aug 2013

Source: IHS Markit
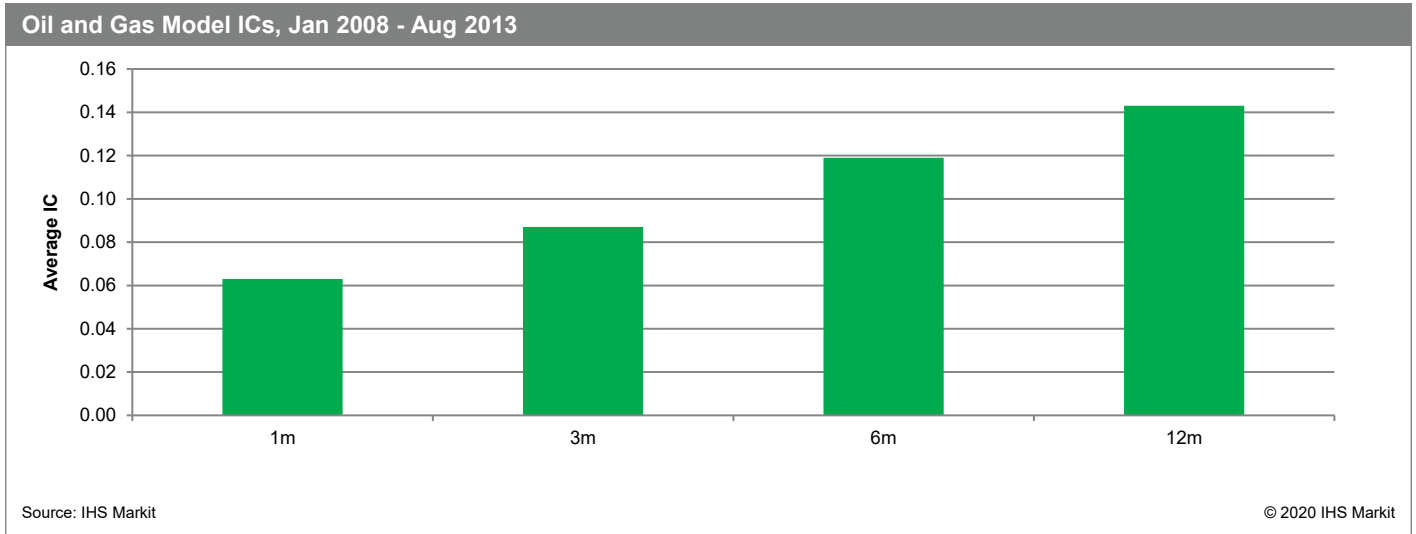
© 2020 IHS Markit

Table 3

Oil and Gas Model 1-month return spreads, Jan 2008 - Aug 2013

	Average	Std dev	IR	Hit rate
1-month	1.49%	3.0	0.50	69%
3-month	3.60%	4.7	0.76	74%
6-month	7.37%	6.5	1.13	84%
12-month	12.31%	8.5	1.45	91%

Source: IHS Markit

© 2020 IHS Markit

First we highlight the increasing nature of ICs over longer holding periods. For 1-month returns, we report an average IC of 0.06, which increases to 0.12 for 6-month (cumulative) returns and reaches 0.14 at 12-months. The significant ICs indicate a robust cross-sectional relationship between model scores and subsequent returns.

In terms of return spreads, the Oil and Gas Model posted a 1.49% average monthly return spread over the test period, with an IR of 0.50 and 69% hit rate. We remark on uneven performance in 2009 and 2010 as global markets adjusted to the financial crisis and sovereign uncertainties that pushed stocks to trough levels. Underperformance to high quality names was a contributing factor to the model outcomes; however, we underscore the more favorable IC results, and a quick rebound to a 100% IC hit rate in 2010, as the model held up well on a cross-sectional basis.

Positive model attributes to longer holding periods is also captured by persistence in returns at the tails of the distribution. Indeed, at the 6-month time horizon, the average return spread came in at 7.37% with an IR of 1.13 and hit rate of 84%. For 12-month holding periods, average return spreads reach 12.31% with a notable 1.45 IR and impressive hit rate of 91%.

For additional robustness checks on monthly spreads we now provide deeper scrutiny of tail statistics. 1-month Q1 excess returns averaged 0.55% over the analysis period with a hit rate of 60%. On the other hand, Q5 excess returns,

where we look for underperformance, averaged -0.91% with 74% of the months posting negative excess returns. The persistence of these desirable tail outcomes contributed to the ideal divergence in monthly cumulative excess returns for Q1 and Q5 (Figure 5), with greater significance from Q5 underperformance.

Figure 5

Oil and Gas Model monthly quintile cumulative excess returns

Source: IHS Markit   © 2020 IHS Markit
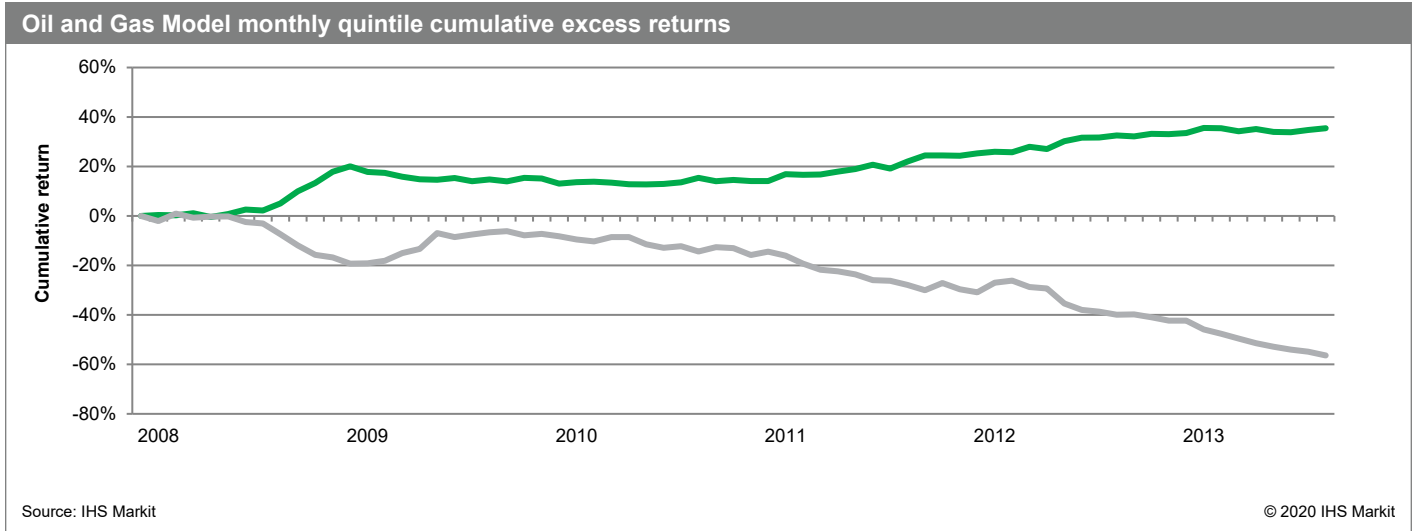
Next we report Oil and Gas Model results and attribution using the Northfield Fundamental Risk Model (see www.northinfo.com). Return decomposition is presented in Table 4. Here we highlight the annualized monthly return for the Q1 compared to Q5 names. Significant results are registered with an active annualized active return of 15.53%. We also note that stock-specific return, i.e., return not attributable to the Northfield risk model factors, comprises 67% of the return. This outcome is significant at the 10% level.

Table 4

Oil and Gas Model Q1 versus Q5 attribution, Jan 2008 - Aug 2013		
Return decomposition	**Annualized**	**Monthly return t-stat**
Q1 return	16.08%	
Q5 return	0.48%	
Active return	15.53%	1.57
Stock specific return	10.95%	1.34
Factor model specific return	4.16%	0.87

Source: IHS Markit   © 2020 IHS Markit

Lastly, we examine the relationship of monthly spreads with coincident 1-month changes in Oil prices. We report a correlation of -0.66 confirming that the model is not merely a proxy for oil price changes. Furthermore, in months where oil prices dropped, the model recorded an average return spread of 3.10%, while still maintaining average positive return spreads during periods of rising oil prices. In fact, subsequent to the oil price peak of mid-2008, we note a 5-month string of robust return spreads. However, these outcomes are not surprising given that we have previously shown that decreases (increases) in oil prices are associated with increased (decreased) returns for companies with the highest (lowest) productivity and efficiency per well captured by our industry-specific metrics.

Single name reconnaissance

Having demonstrated desirable Oil and Gas Model performance, we turn to a detailed single name analysis. We first draw attention to examples demonstrating the added insights achieved by the model.

Tesoro Corp

Tesoro is a $6 billion market cap refining and retailing company based out of San Antonio, Texas. At the start of July 2012, Tesoro entered into the top decile for the Oil and Gas composite score. In the subsequent 12 months, it has returned 130.9% (Figure 6). In the same period, the Energy sector has returned 31.9% and the Oil & Gas Refining & Marketing industry has returned 24.1%.

Figure 6

Tesoro Corp Oil and Gas Model ranks and prices

Source: IHS Markit © 2020 IHS Markit
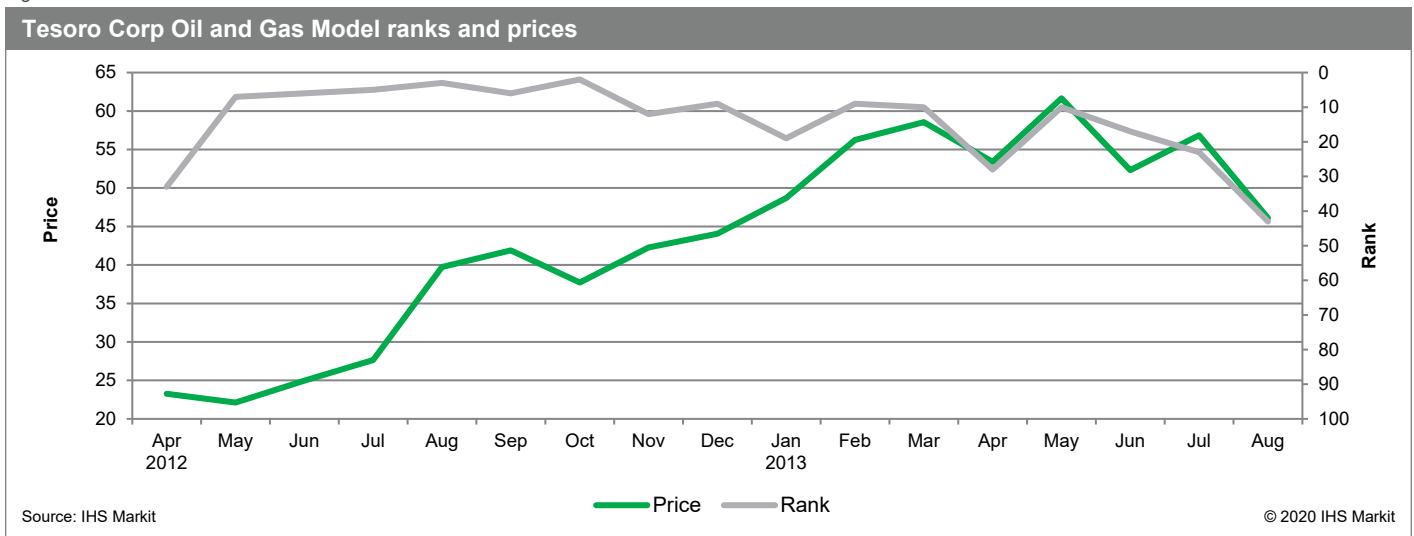
Taking a closer look at the underlying factors, we find that the model rank change was driven by improvements in Net Number of Revisions for FY1, Rational Decay Alpha, Capital Expenditures to Depreciation Linkage and Implied Loan Rate. At the same time, the company also ranked attractively on valuation metrics including TTM Cash Flow to Price and TTM Operating Income to Enterprise Value.

Upward revisions in FY1 earnings estimates for Tesoro supported a change from a neutral rank to the top decile in July. Rational Decay Alpha also improved, with the proprietary price momentum signal showing a strong top decile score, indicating a positive outlook for the price trend. Improvement in Capital Expenditures to Depreciation Linkage indicates a better relative balance of capital expenditures and depreciation management versus other firms in the universe. Lastly for Implied Loan Rate, we observe that the cost to borrow a share of Tesoro declined relative to the other securities in the universe, indicating negative short sentiment had waned.

Overall, Tesoro traded at an attractive valuation leading up to July 2012 and was subsequently buoyed by significant improvement in quality and sentiment factors driving the name into the top decile of the model. Over the next 12 months, Tesoro's stock price was on a bull run, outpacing its peers on average by a spread of approximately 100%.

OGX Petroleum

Next, we highlight OGX Petroleum, a $624million market cap exploration and production company based out of Rio de Janeiro, Brazil. In May 2012, OGX entered into the bottom decile for the Oil and Gas composite score. Subsequent to that time, it has returned -97.7% in the following 12 months (Figure 7), significantly underperforming the Energy sector (15.0%) and Exploration & Production industry (15.6%). Taking a look at the key underlying factors that drove

the model ranks, we find that an already overvalued price (average rank of 95 on TTM Operating Income to Enterprise Value, TTM Cash Flow to Price and TTM Dividend Yield) was coupled with negative rank changes in Net Number of Revisions for FY1, Capital Expenditures to Depreciation Linkage and Implied Loan Rate.

Figure 7

OGX Petroleum Oil and Gas Model ranks and prices

Source: IHS Markit
© 2020 IHS Markit
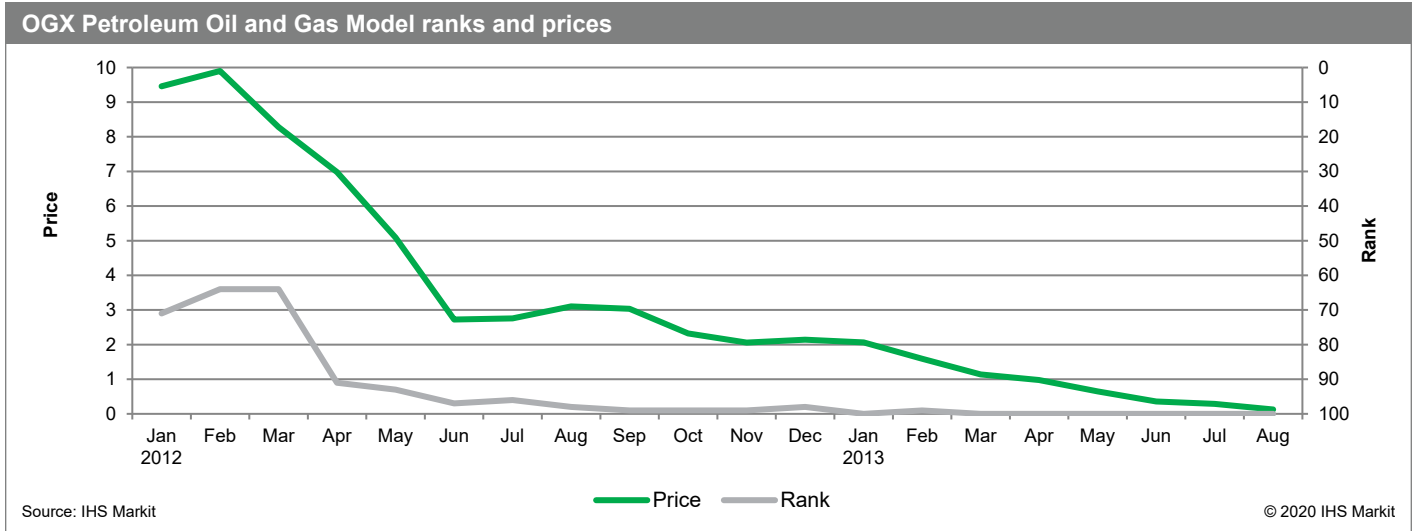
Looking at the Net Number of Revisions for FY1 factor, the FY1 analyst earnings forecast revisions became increasingly negative relative to the Oil & Gas universe, dropping to the bottom decile by June 2012. Capital Expenditures to Depreciation Linkage, in turn, saw a precipitous drop in rank versus its peers due to a large increase in capital expenditures with a small increase in depreciation. This suggests a potential disconnect between the amount spent on capital investment and subsequent booking of depreciation for OGX, a sign of potential earnings manipulation. Lastly, OGX initiated a rank of 93 on the Implied Loan Rate factor in June 2012, indicating collaboration from the securities lending market with an expensive cost to borrow. In all, the model effectively captured the deteriorating quality of OGX and has maintained a bottom decile ranking throughout the past year.

Lastly, in Table 5 we highlight several top and bottom ranked securities as of 31 August 2013. Top names of interest across several regions include Marathon Oil (North America), poised with positive momentum and sentiment, and Statoil ASA (Developed Europe), an undervalued high-quality name. Bottom names include Tetra Technologies (North America), characterized by low growth prospects.

Table 5

Oil and Gas Model ranks, 31 Aug 2013						
Name	Region	Oil and Gas Model	Quality	Growth	Value	Momentum & Sentiment
Top decile						
HESS CORP	North America	7	30	54	42	24
EXXON MOBIL CORP	North America	8	23	68	40	28
MURPHY OIL CORP	North America	4	35	46	34	19
QUESTAR CORP	North America	10	24	72	52	14
UNIT CORP	North America	4	39	27	50	19
MARATHON OIL CORP	North America	3	52	30	33	16
STATOIL ASA	Developed Europe	4	14	80	12	55
ENI	Developed Europe	5	35	55	6	61
ROYAL DUTCH SHELL	Developed Europe	17	34	74	18	56
CNOOC LTD	Developed Pacific	1	17	46	30	40
INPEX CORPORATION	Developed Pacific	4	49	6	40	37
WOODSIDE PETROLEUM	Developed Pacific	14	29	46	44	47
PETROCHINA CO	Emerging Asia	6	31	53	22	50
Bottom decile						
TETRA TECHNOLOGIES INC	North America	91	48	93	77	52
GULFPORT ENERGY CORP	North America	92	67	76	88	34
HELIX ENERGY SOLUTIONS GRP	North America	95	67	88	93	37
GOODRICH PETE CORP	North America	91	50	56	83	72
NIKO RES LTD	North America	98	61	51	98	87
LAYNE CHRISTENSEN CO	North America	93	66	68	91	39
MAGNUM HUNTER RES CORP	North America	94	72	12	95	81
ISRAMCO INC	North America	95	64	52	87	73
FOREST OIL CORP	North America	92	62	81	78	45
QUICKSILVER RESOURCES INC	North America	100	72	90	80	80
ULTRA PETROLEUM CORP	North America	96	54	88	82	66
HERITAGE OIL	Developed Europe	87	52	2	92	67
SALAMANDER ENERGY	Developed Europe	86	40	92	59	63
SENEX ENERGY LTD	Developed Pacific	81	72	4	74	59
AURORA OIL&GAS LTD	Developed Pacific	91	73	59	67	61

Source: IHS Markit   © 2020 IHS Markit

Conclusion

In this research note we utilize our Oil and Gas industry-specific signal suite to complement other fundamental and sentiment-based measures in introducing a model to score names in this sector. A multifactor strategy built on Management Quality, Growth, Value and Momentum & Sentiment signals, the Oil and Gas Model is designed to systematically identify winners or losers within the industry.

After a brief review of the model and universe, we present performance analysis of the components of the model illustrating the robustness of the model construction. Top performing indicators include Implied Loan Rate, TTM Operating Income to Enterprise Value, Net # of Revisions for Fiscal Year 1 and Capital Expenditures to Depreciation. Additionally, low correlations in general among factors set up an ideal multi-factor methodology.

Next, we highlight Oil and Gas Model results over the test period. Significant ICs indicate a robust cross-sectional relationship between model scores and subsequent returns that persist out to a 12-month holding period (Average: 0.14). The model also posts a 1-month (12-month) average return spread of 1.49% (12.31%), with an IR of 0.50 (1.45) and 69% (91%) hit rate. Underperformance to Q5 names is particularly beneficial to model results.

Additional robustness checks confirm that stock-specific return, i.e. return not attributable to the Northfield risk model factors, comprises 67% of the return. We also highlight a negative relationship between model performance and coincident changes in oil price confirming that the model is not merely a proxy for oil price changes.

Rounding out the analysis, we present several examples of companies that illustrate the robustness of the Oil and Gas Model along with a sampling of current top and bottom ranked names.

Appendix

Definitions

24-M Residual Return Variance Variance of a stock's monthly residual return in the last 24 months. The monthly residual return is the stock's monthly return less the product of its proprietary 60-month Beta and the index monthly return. We rank this factor in ascending order.

Capital Expenditures to Depreciation Absolute value of the difference between ranked (1-1000) quarterly/semi-annual capital expenditures to assets and ranked (1-1000) quarterly/semi-annual depreciation to assets. We rank this factor in ascending order.

Free Cash Flow Return on Invested Income Trailing 12-month free cash flow divided by the average invested capital in the same period. Invested capital equals the sum of common equity, long-term debt, minority interest and preferred stock. We rank this factor in descending order.

Implied Loan Rate Value and time weighted average fee for the rate charged by the custodian to the borrower of a security. We rank this factor in ascending order.

Net Number of Revisions for Fiscal Year 1 Weighted average of the number of FY1 analyst earnings forecasts raised less the number lowered within a month, divided by the total number of analyst forecasts. We rank this factor in descending order.

Production Growth Difference between the most recent oil and gas production and the corresponding value 1 year ago, divided by the latter. We rank this factor in descending order.

Rational Decay Alpha Historical 12-month market adjusted excess return using a proprietary rational decay function. We rank this factor in descending order.

Relative Net Income-to-Wells Trailing 12-month Net Income in relation to the latest reported total number of wells of all combustibles (Oil, Liquid Natural Gas and Natural Gas) standardized in its wells-based cohort defined by market cap. We rank this factor in descending order.

Reserve-Replacement Ratio Amount of proved reserves added to the reserve base for all combustibles (crude oil, natural gas, liquid natural gas) relative to the amount of oil and gas produced during the year. We rank this factor in descending order.

TTM Cash Flow-to-Price Trailing 12-month cash flow per share for a stock scaled by its trading price. Cash flow is defined as the reported net income plus depreciation. We rank this factor in descending order.

TTM Dividend Yield Trailing 12-month dividends per share for a stock divided by its trading price. We rank this factor in descending order.

TTM Operating Income to Enterprise Value Trailing 12-month operating income (before depreciation and amortization) divided by enterprise value (Equity Market Value + Long-term Debt + Short-term Debt + Preferred Stock + Minority Interest – Cash). We rank this factor in descending order.

Results

Table A1

Oil and Gas subcomposite 1-month return spreads, Jan 2008 - Aug 2013				
	Average	**Std dev**	**IR**	**Hit rate**
Quality	0.30%	2.62	0.12	56%
Growth	0.44%	1.51	0.30	69%
Value	1.01%	2.06	0.49	68%
Momentum & Sentiment	0.96%	2.04	0.47	74%

Source: IHS Markit © 2020 IHS Markit

Table A2

Oil and Gas subcomposite 1-month return spread correlations, Jan 2008 - Aug 2013				
	Quality	**Growth**	**Value**	**Momentum & Sentiment**
Quality	1			
Growth	0.23	1		
Value	0.51	0.09	1	
Momentum & Sentiment	-0.28	0.14	-0.16	1

Source: IHS Markit © 2020 IHS Markit

Figure A1

Oil and Gas Model 1-month ICs

Source: IHS Markit

© 2020 IHS Markit

Figure A2

Oil and Gas Model 1-month return spreads

Source: IHS Markit
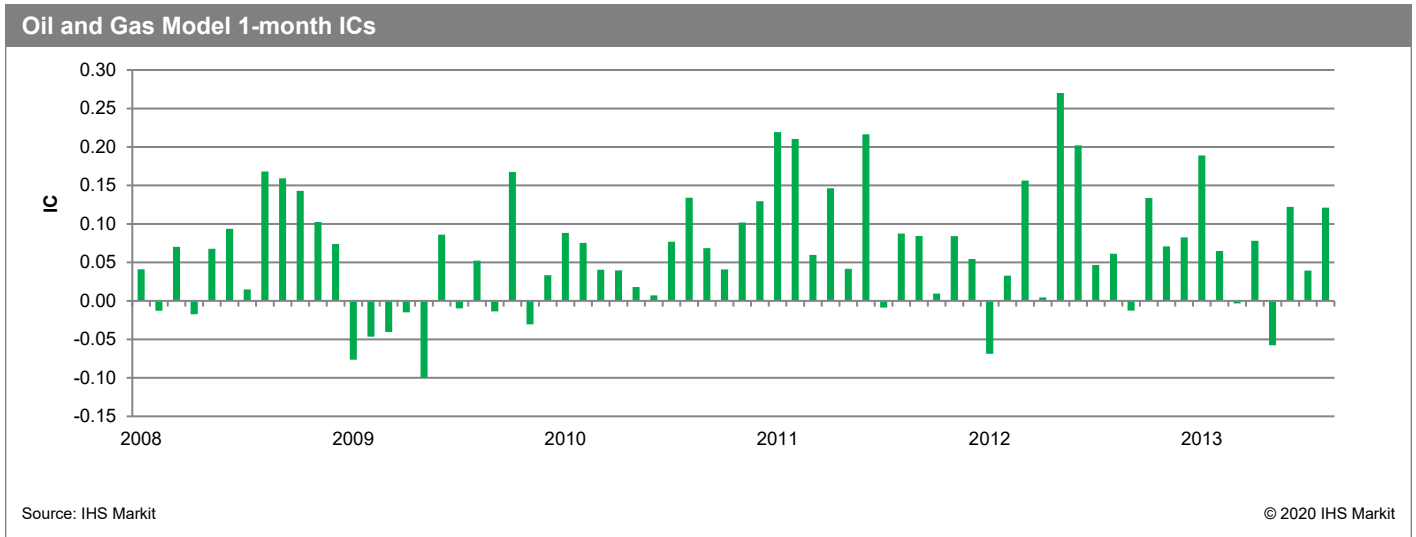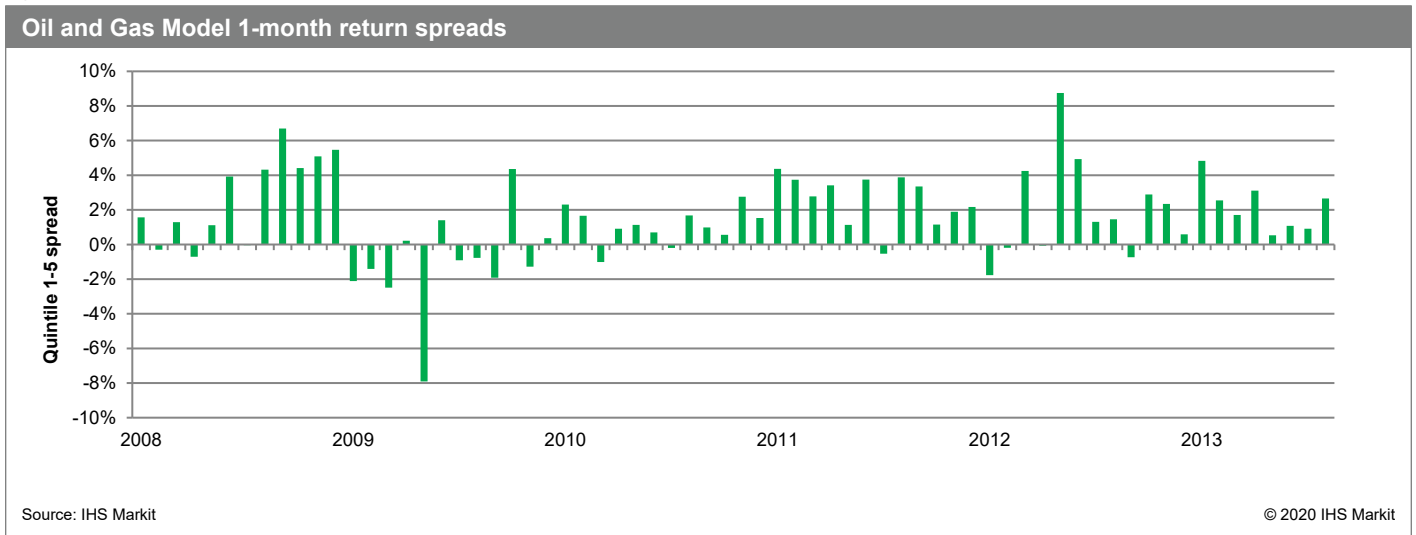
© 2020 IHS Markit

IHS Markit Customer Support:

Support@ihsmarkit.com
Americas: +1 877 762 7548
Europe, Middle East, and Africa: 00800 6275 4800
Asia and the Pacific Rim: +65 6922 4210