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Global

Energy Weekly

Commodities Research

Unfolding events continue to create upside risks to our forecasts

We estimate there is a $10/bbl risk premium embedded in oil prices. However, with the coalition airstrikes on Libya, damaged nuclear reactors in Japan, and continued risk of political contagion in the Middle East and North Africa, the risks to our forecasts are still to the upside.

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Record net speculative length in WTI over 375 million barrels, implies a $10/bbl risk premium in oil price from recent events

In the current environment, it is not surprising that net speculative long positions in WTI crude oil reached a new record high of 391 million barrels. In comparison, when WTI crude oil prices peaked at over $145/bbl in July 2008, the net speculative long position was less than 100 million barrels. We estimate that each million barrels of net speculative length tends to add 8-10 cents to the price of a barrel of oil. Given that net speculative length has been about 100 million barrels higher since political protests spread from Tunisia and Egypt to Libya, this suggests that the oil market has been pricing a $10/bbl risk premium into the price of crude oil due to concerns over potential political contagion to other oil producing states in the MENA region. This is consistent with the fact that Brent crude oil has been trading near $115/bbl in the recent period, $10/bbl above our near-term price target.

Concerns over the impact of events in Japan on the economy provoked a sharp, though brief, sell-off last week, but we expect the increased demand for oil-fired generation will far outweigh oil demand lost to reduced economic activity

Crude oil prices fell sharply in a broad liquidation across asset markets on Tuesday as demand concerns raised by events in Japan briefly offset the supply concerns arising from the MENA region. However, net speculative length only declined by 15 million barrels, highlighting the strength of the MENA concerns. Further, we continue to expect the increased demand for oil due to the loss of nuclear generation capacity in Japan will far outweigh the demand lost to lower economic activity. More specifically, we estimate that 230 thousand b/d of combined residual fuel oil and direct-burn crude oil will be required to offset the nuclear generating capacity lost in Japan. We estimate that to lose a comparable amount of oil demand in Japan would require an 8.0% decline in Japan's economic activity due to the earthquake and its aftermath.

Hedging and trading recommendations

Petroleum

Hedging recommendations

Consumers: Global inventories drew substantially in 2H2010, and we expect US inventories to continue to draw to more normal levels in 2011. With the supply-demand balance in a seasonally adjusted deficit and robust world economic growth expected in 2011 and 2012, we expect OPEC spare capacity will need to return to the market in 2011. As OPEC spare capacity is drawn down, we expect a structural bull market to return to the oil market, with substantially higher prices. Consequently, we believe that forward price levels offer good hedging opportunities for consumers in calendar 2011/2012, despite the recent rally.

Refiners: Refining margins have recently showed counter-seasonal strength after a period of weakness following the sharp May sell-off. However, we expect refining margins to remain under pressure owing to the large increase in refining capacity in Asia. As the light-heavy spreads have already widened, we expect complex oil refiners to return from maintenance and increase production, which would put pressure on simple refining margins relative to WTI prices. As a result, we would view any renewed rise in long-dated refinery margins in 2011 as a selling opportunity for refinery hedgers. For 2011 and beyond, we believe that crude will be the bottleneck in the system, rather than refining; this would squeeze margins from the crude side through backwardation, suggesting that refiners should also then look for potential time-spread hedges.

Producers: While we continue to expect crude oil prices to move higher in 2011, limiting tactical opportunities, the risk-reward trade-offs for producer risk management programs will likely improve again as prices move higher over the coming months.

Trading recommendations

Long Gasoil: Buy April 2011 European ICE Gasoil (current value $972.25/mt; first suggested at $953.25/mt; $227.00/mt gain including a $208.00/mt roll gain from earlier positions in January and March contracts.

We continue to expect improving fundamentals to provide additional support to prices.

Current trading recommendations

Current trades	First recommended	Initial value	Current Value	Current profit/(loss)[1]
Long European Gasoil				
Buy April 2011 European ICE Gasoil	November 10, 2010 - *Energy Weekly* Rolled on March 10, 2011 from a Buy March 2011 European ICE Gasoil for a $208.00/mt gain	$953.25/mt	$972.25/mt	**$227.00/mt**
Long CCCP basket				
Buy Dec-11 WTI (weight 40%), Dec-11 LME Copper (20%), Nov-11 CBOT soybeans (10%), Dec-11 NYB cotton (10%), S&P GSCI platinum index (20%)	December 1, 2010 - *Global Viewpoint*	100.0	117.0	**17.0%**
Long Soybeans				
Buy November 2011 CBOT Soybean	November 18, 2010 - *Agriculture Update*	$11.60/bu	$13.34/bu	**$1.74/bu**
Long Gold				
Buy December 2011 COMEX Gold	October 11, 2010 - *Precious Metals*	$1,364.2/toz	$1,421.7/toz	**$57.5/toz**
Long Copper				
Buy December 2011 Copper	October 4, 2010 - *Metals Watch*	$8,024/mt	$9,518/mt	**$1,494/mt**
Long Platinum				
Long October 2011 NYMEX Platinum	July 15, 2009 - *Commodity Watch* Rolled on February 18, 2011 from a long January 2011 NYMEX Platinum for a $626.0/toz gain	$1,791.8/toz	$1,729.3/toz	**$563.5/toz**

[1]As of close on March 18, 2011. Inclusive of all previous rolling profits/losses.

Source: Goldman Sachs Global ECS Research.

Price actions, volatilities and forecasts

	Prices and monthly changes[1]			Volatilities (%) and monthly changes[2]				Historical Prices						Price Forecasts[3]		
	units	18 Mar	Change	Implied[2]	Change	Realized[2]	Change	3Q 09	4Q 09	1Q 10	2Q 10	3Q 10	4Q 10	3m	6m	12m
Energy																
WTI Crude Oil	$/bbl	101.07	16.75	34.8	6.57	41.0	15.3	68.24	76.13	78.88	78.05	76.21	85.24	**99.50**	**100.50**	**103.00**
Brent Crude Oil	$/bbl	113.93	12.29	35.9	8.75	35.1	13.4	68.87	75.54	77.37	79.41	76.96	87.45	**105.00**	**105.00**	**106.50**
RBOB Gasoline	$/gal	2.95	0.46	33.9	4.90	44.4	13.0	1.86	1.94	2.11	2.17	2.00	2.22	**2.75**	**2.62**	**2.78**
USGC Heating Oil	$/gal	3.01	0.33	33.1	5.82	29.2	6.8	1.73	1.94	2.01	2.07	2.01	2.31	**2.86**	**2.89**	**2.98**
NYMEX Nat. Gas	$/mmBtu	4.17	0.19	33.5	0.07	38.1	2.8	3.44	4.93	4.99	4.35	4.23	3.98	**4.00**	**3.75**	**4.50**
UK NBP Nat. Gas	p/th	62.34	9.88	26.2	-3.12	32.8	13.1	23.48	31.83	33.35	37.48	42.68	51.74	**38.90**	**40.50**	**44.70**
Industrial Metals[4]																
LME Aluminum	$/mt	2560	55	23.1	-1.44	21.8	3.3	1836	2037	2199	2122	2110	2365	**2200**	**2200**	**2200**
LME Copper	$/mt	9510	-501	28.5	0.16	26.6	4.6	5856	6677	7274	7042	7278	8614	**8800**	**8800**	**11000**
LME Nickel	$/mt	26750	-1995	34.4	-1.39	38.9	18.7	17576	17593	20163	22431	21271	23619	**19500**	**19500**	**19500**
LME Zinc	$/mt	2325	-166	32.1	-3.16	33.4	3.0	1780	2241	2307	2052	2043	2333	**2400**	**2400**	**3100**
Precious Metals																
London Gold	$/troy oz	1416	43	15.9	-0.75	14.1	-0.6	962	1099	1110	1197	1228	1370	**1480**	**1565**	**1690**
London Silver	$/troy oz	35.2	4.4	35.6	2.13	50.0	14.9	14.7	17.6	16.9	18.3	19.0	26.4	**24.7**	**26.1**	**28.2**
Agriculture																
CBOT Wheat	cent/bu	723	-117	39.3	-1.40	50.5	21.3	485	522	496	467	653	707	**775**	**750**	**750**
CBOT Soybean	cent/bu	1363	-6	27.9	0.48	37.5	20.4	1049	1002	955	957	1035	1245	**1500**	**1575**	**1575**
CBOT Corn	cent/bu	684	-7	40.9	3.02	44.6	18.8	327	386	370	355	422	562	**620**	**600**	**580**
NYBOT Cotton	cent/lb	199	11	n/a	n/a	51.2	17.8	60	71	76	81	87	128	**150**	**125**	**125**
NYBOT Coffee	cent/lb	277	19	n/a	n/a	35.7	8.3	125	139	134	140	174	205	**200**	**175**	**175**
NYBOT Cocoa	$/mt	3127	-283	n/a	n/a	34.2	5.9	2867	3259	3070	2987	2863	2856	**2700**	**2400**	**2400**
NYBOT Sugar	cent/lb	27.7	-3.1	40.8	-10.05	63.2	13.4	20.6	23.6	24.4	15.5	20.2	29.0	**30.0**	**20.0**	**20.0**
CME Live Cattle	cent/lb	111.7	2.6	n/a	n/a	21.2	9.5	85.4	83.6	90.5	93.7	95.0	100.5	**115.0**	**115.0**	**120.0**
CME Lean Hog	cent/lb	88.3	-4.2	n/a	n/a	24.2	-7.6	53.7	57.8	69.7	81.9	79.7	71.2	**95.0**	**105.0**	**95.0**

1 Monthly change is difference of close on last business day and close a month ago.
2 Monthly volatility change is difference of average volatility over the past month and that of the prior month (3-mo ATM implied volatility, 1-mo realized volatility).
3 Price forecasts refer to prompt contract price forecasts in 3-, 6-, and 12-months time.
4 Based on LME three month prices.

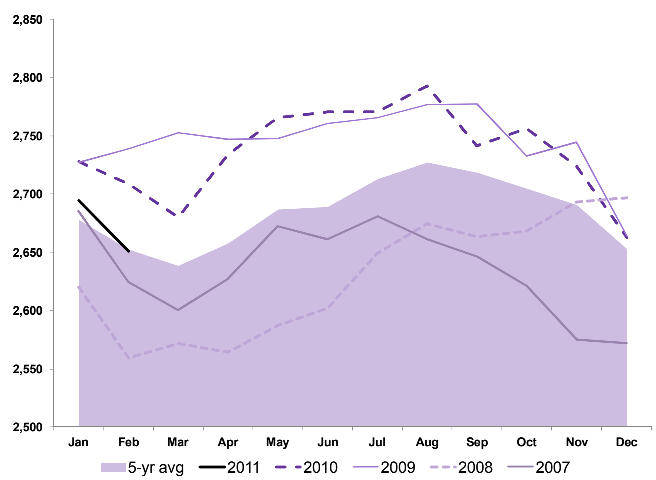
Source: Goldman Sachs Global ECS Research.

Unfolding events continue to create upside risks to forecasts

While the ongoing economic recovery has now drawn OECD total petroleum inventories back to five-year average levels (Exhibit 1), the oil market remains justifiably focused on the risks to the forward supply-demand balance posed by the dramatic events unfolding across the globe. In addition to the risks to oil supply from the ongoing political unrest in the Middle East and North Africa (MENA) and the impact on oil demand from the damaged nuclear reactors in Japan, this weekend has brought reports suggesting another oil well in the deepwater off the US Gulf Coast is leaking. However, at the time of writing, US Coast Guard states that the observed “oil sheen” is likely the result of sediment and not oil.

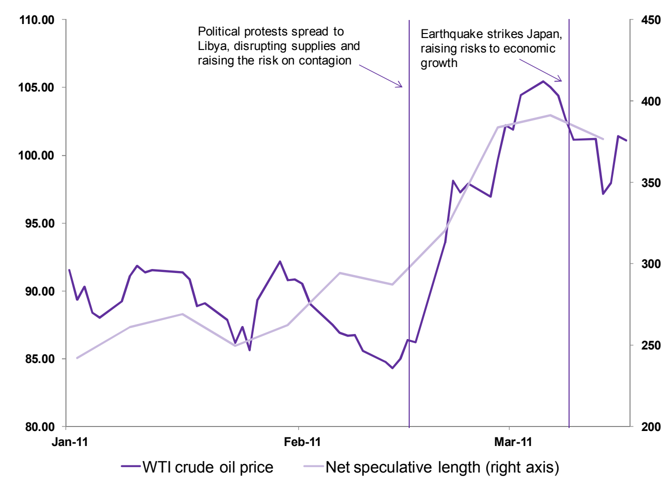
In such an environment, it is not surprising that net speculative long positions in WTI crude oil reached a new record high of 391 million barrels. In comparison, when WTI crude oil prices peaked at over $145/bbl in July 2008, the net speculative long position in the light sweet crude oil contract (future and options) was less than 100 million barrels. We estimate that each million barrels of net speculative length tends to add 8-10 cents to the price of a barrel of crude oil. Given that net speculative length has been about 100 million barrels higher since the political protests spread from Tunisia and Egypt to Libya (Exhibit 2), this suggests that the oil market has been pricing a $10/bbl risk premium into the price of crude oil due to concerns over potential political contagion to other oil producing states in the MENA region. This is consistent with the fact that Brent crude oil has been trading near $115/bbl in the recent period, $10/bbl above our 3-month target.

Exhibit 1: OECD total petroleum inventories have drawn back to five-year average levels…
Million barrels



Source: IEA and Goldman Sachs Global ECS Research.

Exhibit 2: … and the market is understandably focused on the risks to the forward supply-demand balance
$/bbl (left axis); million barrels (right axis)



Source: NYMEX, CFTC, and Goldman Sachs Global ECS Research.

Crude oil prices fell sharply in a broad liquidation on Tuesday as demand concerns raised by the unfolding events in Japan briefly offset the supply concerns arising from the MENA region. However, net speculative length only declined by 15 million barrels, highlighting the strength of the MENA concerns. Further, as we discuss below, we expect that the increased demand for oil due to the loss of nuclear generation capacity in Japan will far outweigh the demand lost to lower economic activity. More specifically, we estimate that 230 thousand b/d of combined residual fuel oil and direct-burn crude oil will be required to offset the nuclear generating capacity lost in Japan. We estimate that to lose a comparable amount of oil demand in Japan would require an 8.0% decline in Japan’s economic activity due to the earthquake and its aftermath.

Consequently, we continue to view a containment of the threat to oil production from the political unrest in the MENA region as the primary downside risk to crude oil prices in the near term, with a downside risk from current prices of near $10/bbl. However, at this time assessing the threat to oil production remains challenging, with the ultimate impact of the initiation of airstrikes this weekend by a coalition including the United States, France, and the United Kingdom enforcing a UN-sanctioned "no fly" zone in Libya still unclear. Further, with reports of protests in Syria and Yemen, hostilities at the Gaza/Israel border, and Saudi troops in Bahrain, the risk of political contagion remains.

These developments suggest that the $10/bbl risk premium may prove too modest, and as the world focuses on MENA and Japan, events continue to unfold elsewhere. This weekend brought reports of a 100 mile long oily sheen spotted on the waters off the US Gulf Coast, 20 miles north of the site of last year's Macondo leak. In the wake of last year's leak, another leak in the deepwater would certainly increase the risk of a reduction in supplies from the US portion of the Gulf of Mexico. Fortunately, the initial tests carried out by the US Coast Guard suggest the "oil sheen" is likely caused by large amounts of sediment, and not fresh oil.

Consequently, the balance of risks to our forecasts remains clearly skewed to the upside, with the primary risk to oil prices over the medium term coming from higher oil prices and their potential to slow the pace of economic recovery.

We expect increased demand for oil from power generation sector to far outweigh demand lost due to a decline in pace of economic activity in Japan

Crude oil prices sold off sharply, although briefly, last week as concerns mounted over the impact of the unfolding events in Japan on the country's economy and its demand for oil. While a decline in Japan's pace of economic activity would slow its oil demand, the decline is likely to be far smaller then the increase in oil demand as Japan uses its oil-fired power generation capacity to replace lost nuclear generation capacity.

In order to weight the relative impact of lost economic activity and increased demand for oil-fired power generation on Japan's oil demand, we regress the year-over-year change in Japan's oil demand (in thousand b/d) on real yoy GDP growth (in percent), the yoy change in generation (in thousand MWh/d) as well as the yoy change in weather (HDD and CDD) and a trend. As shown in Exhibit 3, this simple model has explained over 70% of the variation in the annual growth in Japan's oil demand over the past 20 years.

The regression analysis shows that a 1% decline in its real GDP would lower Japan's total oil demand by 31 thousand b/d. Given Japan consumes around 4.4 million b/d, this implies a GDP elasticity of 0.7. Meanwhile the loss of 1 GW of nuclear generation would lead to an increase in oil demand of 0.82*24 hours/day or around 20 thousand b/d. With 12.5 GW of Japan's nuclear capacity offline following the earthquake and tsunami, this implies an incremental oil demand of 247 thousand b/d (Exhibit 4), mainly in residual fuel and crude oil which is burned directly (which is included in the "Other producers" category, Exhibit 3).

Exhibit 3: Residual fuel and direct-burn crude oil are the most sensitive substitutes for nuclear plant outages…
Regression results

	Real GDP		Nuclear Power		R-square
	Estimate	Std Dev	Estimate	Std Dev	
LPG and ethane	1.67	1.40	-0.03	0.04	15.3%
Naphtha	9.56	2.12	-0.01	0.06	27.5%
Motor gasoline	0.07	0.88	0.00	0.02	37.8%
Jet and kerosene	-0.06	1.30	0.00	0.04	54.0%
Gasoil and diesel	4.59	1.05	0.00	0.03	73.4%
Residual fuel	3.64	2.06	-0.44	0.06	63.5%
Other products	11.52	2.59	-0.35	0.07	56.7%
Total	31.00	5.51	-0.82	0.15	72.4%

Source: IEA and Goldman Sachs Global ECS Research.

Exhibit 4: … We expect the impact of nuclear outages to far outweigh that of potential economic slowdown
Thousand b/d; impact of a 0.50% decline in GDP, and of a 12.5 GW loss of nuclear capacity

	GDP	Nuclear	Total
LPG and Ethane	-1	8	7
Naphtha	-5	3	-2
Motor gasoline	0	0	0
Jet and Kerosene	0	0	0
Gasoil and diesel	-2	1	-1
Residual fuel	-2	131	129
Other products	-6	104	98
Total	-16	247	232

Source: IEA and Goldman Sachs Global ECS Research.

Meanwhile, assuming that Japan's power generation infrastructure is stabilized by the end of April (which is the current plan from Tokyo Electric Power Company), our Economists in Japan would expect a 0.5% decline in real GDP. Under this scenario, the loss of oil demand would be only 16 thousand b/d. While a delay in stabilizing the power grid could result in more severe GDP losses (for details see our Japan Economics Analyst: *Earthquake damages likely to reach ¥16 trillion*, March 15, 2011), these estimates imply that the impact of the earthquake and its aftermath would have to slow the Japanese economy by 8.0% in order to outweigh the impact of the need for more oil-fired generation given the loss of the nuclear generation capacity.

While the historical response in Japan has been to turn to residual fuel and crude oil-fired generation in response to lost nuclear generation capacity, disruptions to the power grid itself could lead to more demand for portable diesel-fired generation. This, combined with the loss of Japanese refining capacity, will likely remain supportive for diesel cracks and prices, which led us to roll our long March ICE gasoil trading recommendation into the April contract at expiry on March 10, 2011 for a $208.00/MT (26.3%) gain.

US oil stocks

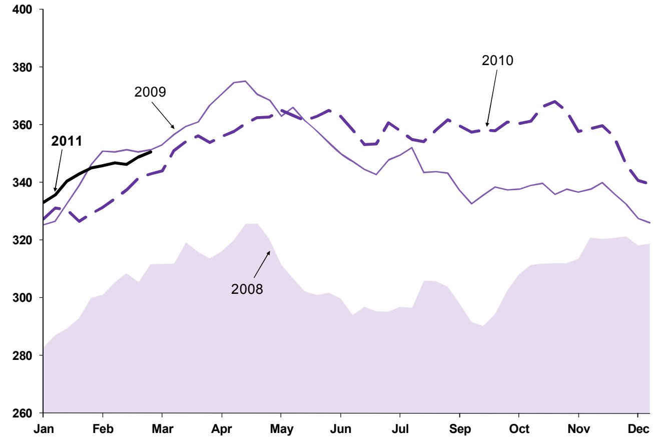
Million barrels

	End-of-Week			Change	
Product	11-Mar-11	11-Feb-11	12-Mar-10	4Wk	Year
Total Petrol	1039.7	1069.7	1038.8	-30.0	0.8
Crude Oil	350.6	345.9	344.0	4.7	6.6
Total Product	689.1	723.8	694.8	-34.7	-5.8
Mogas	225.0	241.1	227.3	-16.1	-2.2
Jet Fuel	40.5	41.4	43.2	-0.9	-2.6
Distillate	152.6	161.3	148.1	-8.7	4.5
Resid	35.8	39.5	38.9	-3.7	-3.1
Other	187.8	190.0	131.0	-2.2	56.8

Source: DOE.

US crude oil stocks

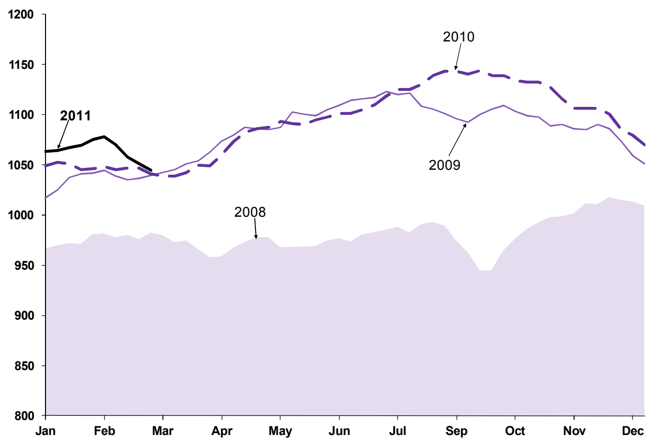
Million barrels



Source: DOE.

US total hydrocarbon stocks

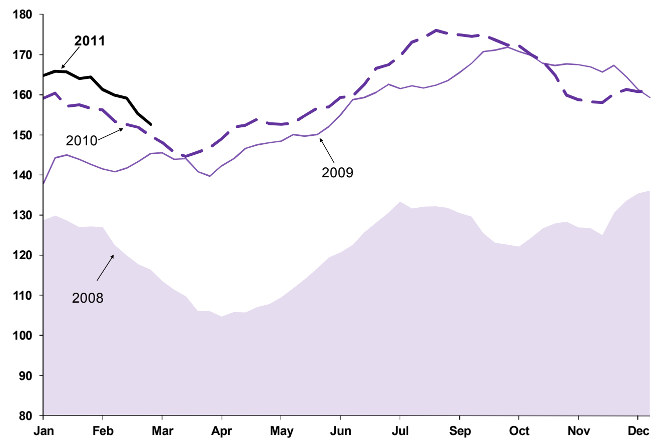
Million barrels



Source: DOE.

US distillate stocks

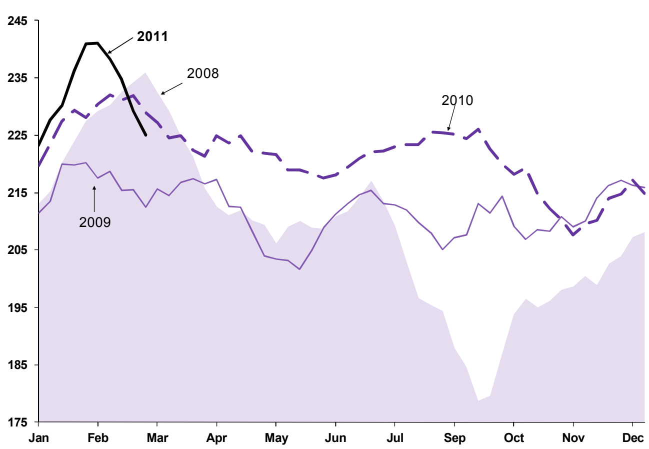
Million barrels



Source: DOE.

US motor gasoline stocks

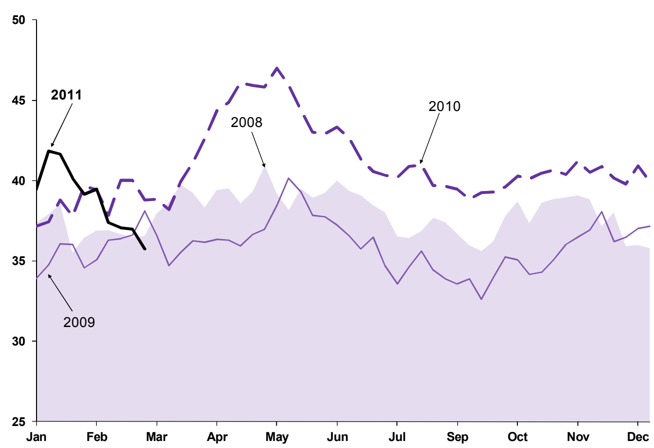
Million barrels



Source: DOE.

US residual fuel stocks

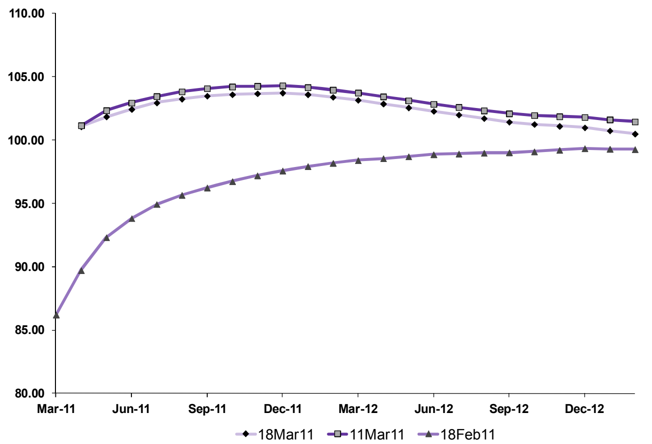
Million barrels



Source: DOE.

WTI forward curve

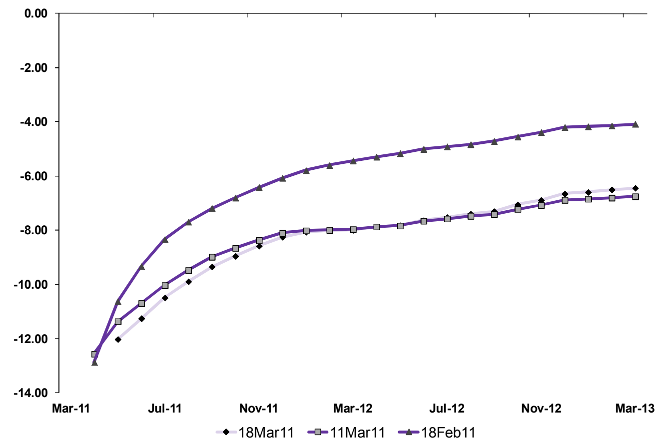
US$/bbl



Source: Goldman Sachs Global ECS Research.

WTI-Brent forward curve

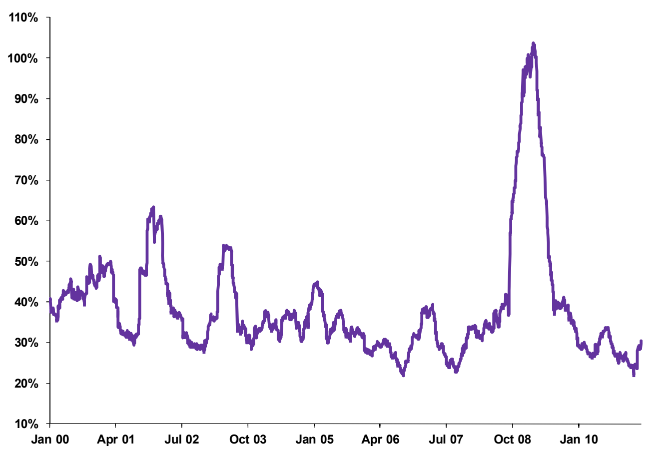
US$/bbl



Source: Goldman Sachs Global ECS Research.

Historical realized WTI volatility

Percentage



Source: Goldman Sachs Global ECS Research.

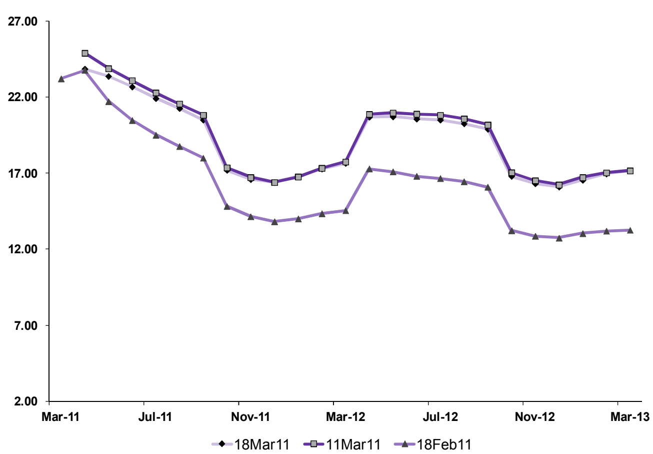
Historical WTI prices

US$/bbl

Source: Goldman Sachs Global ECS Research.

321 NYMEX forward curve

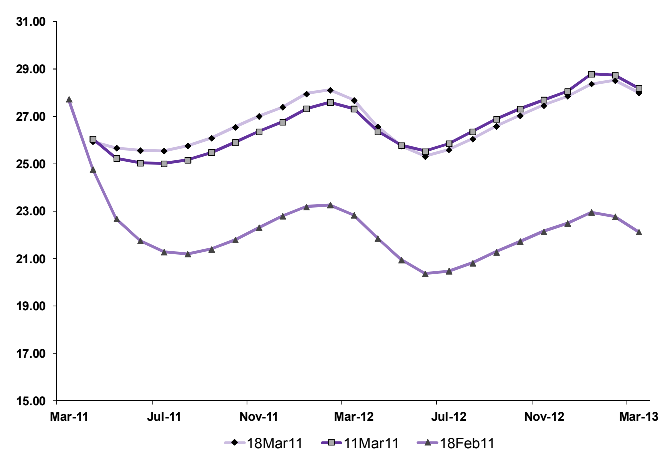
US$/bbl



Source: Goldman Sachs Global ECS Research.

NYMEX heating oil crack forward curve

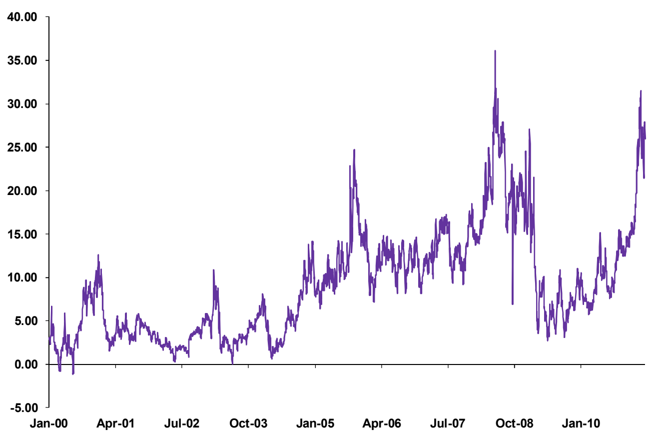
US$/bbl



Source: Goldman Sachs Global ECS Research.

Historical NYMEX heating oil crack prices

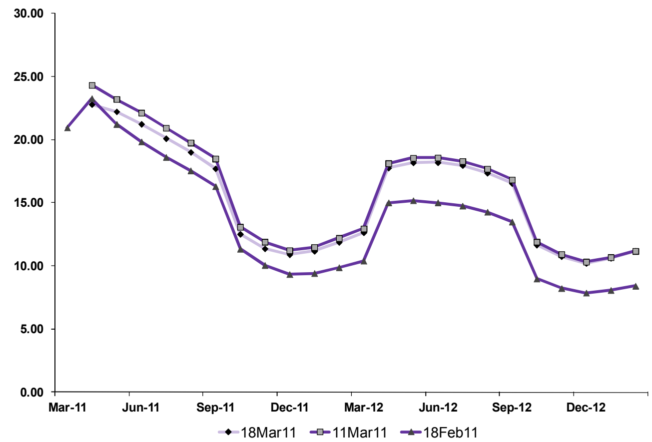
US$/bbl



Source: Goldman Sachs Global ECS Research.

RBOB crack forward curve

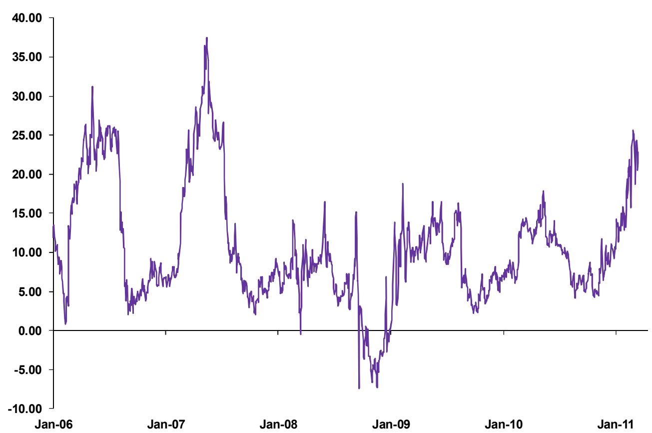
US$/bbl



Source: Goldman Sachs Global ECS Research.

Historical RBOB crack prices

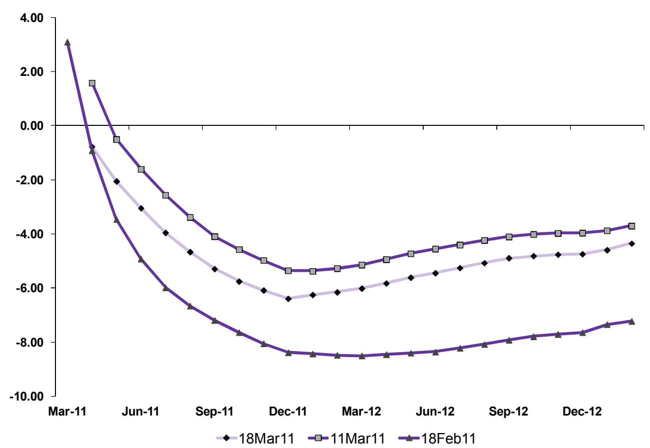
US$/bbl



Source: Goldman Sachs Global ECS Research.

USGC 1.0 percent fuel oil crack forward curve

US$/bbl



Source: Goldman Sachs Global ECS Research.

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