

VM Group research for Fortis Bank Nederland

Energy Monthly

March 2010

Fortis Bank Nederland

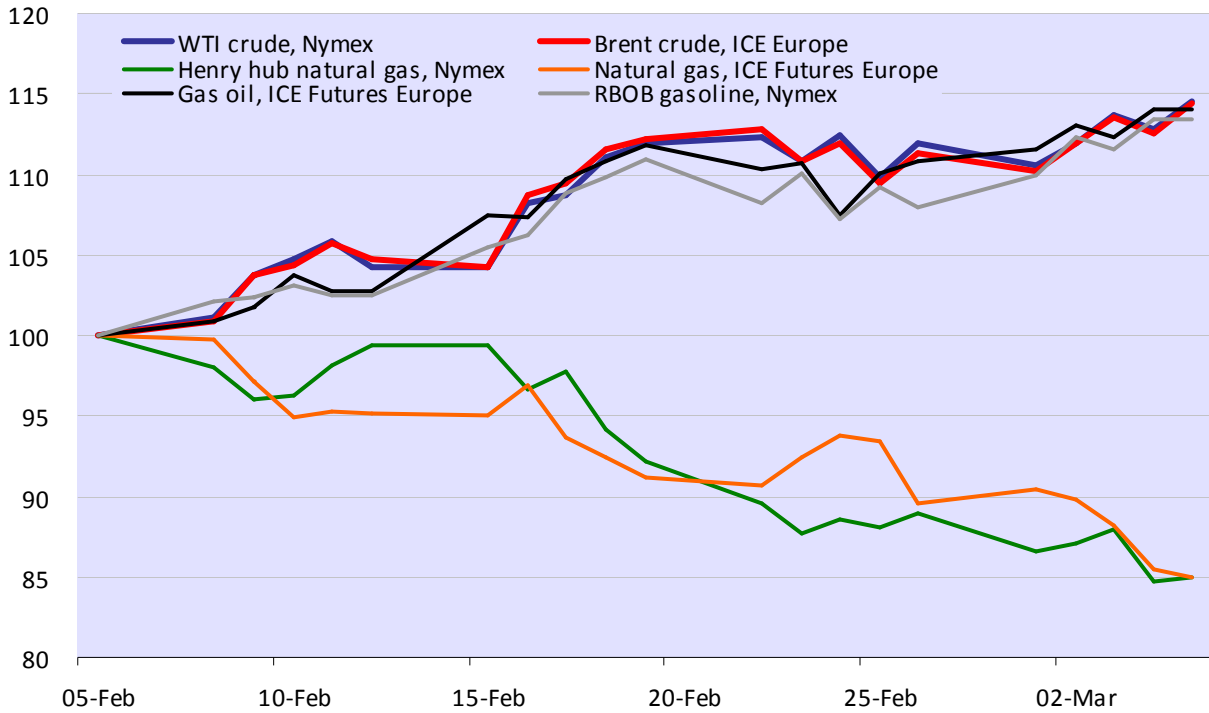
VM GROUP

Contents

Feature	4
Oil & Gas	8
Refining.....	13
Power.....	17
Fund activity	21
Prices over last three years	23
Oil Supply and Demand.....	25
About VM Group.....	28
Disclaimer and copyright	29

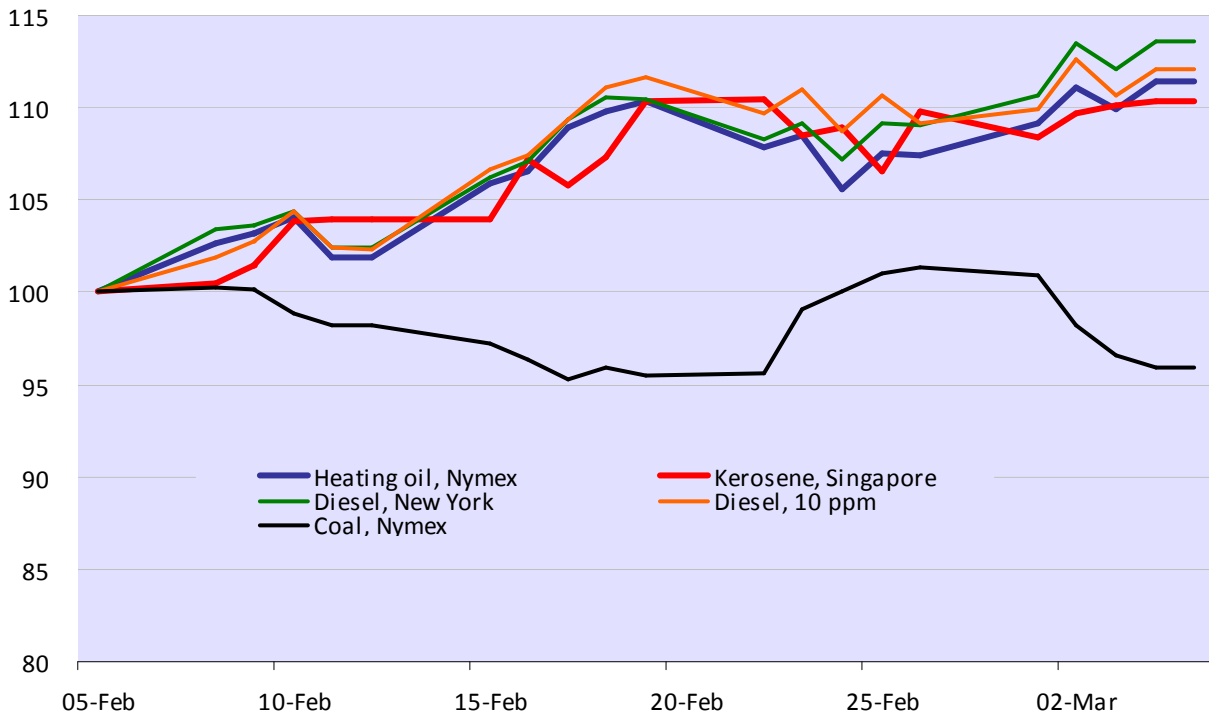
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Selected energy prices, over past month: re-based to 100



Source: VM Group

Selected energy prices, over past month: re-based to 100



Source: VM Group

Feature



Shale gas: the new frontier?

By Michael Cassell

It is, quite literally, as old as the hills and its presence has been known for decades. But advances in technology and the drive to improve energy security mean that shale gas may finally be about to have its day. The emergence of an alternative fuel, in the form of non-conventional gas, is already provoking a global rethink in gas markets and posing a serious threat to traditional gas suppliers. One after another, big energy players are trying to climb on board the shale gas train.

Charif Souki and Cheniere Energy, the US company he leads, have fallen victim to a seismic shake-up in the country's natural gas market that now promises to roll around the world, forcing fundamental changes in the nature and structure of global gas supplies. Souki heads a company that has spent \$1.5bn constructing a terminal on the Gulf of Mexico, designed to become a vital part of America's new energy infrastructure. Giant oil tankers from places such as Qatar and Russia's far east were meant to dock there and offload their cargoes of liquefied natural gas (LNG) directly into a national pipeline network to feed the country's energy-hungry population. One vessel a day was due to use the new port but, since it was completed 18 months ago, only 10 ships have arrived.

The global economic downturn has certainly not helped Cheniere's chances of success, but there is a deeper reason his company, once a stock market favourite, has plunged into deep losses and seen its market value slashed. It's not merely a lack of customers – but the emergence of shale gas as a big player in energy markets. Oil companies have known about shale gas for decades, but

frequently dismissed it as too expensive to extract. Now, however, that has all changed, with technological advances that enable rigs to drill deep and then turn horizontally to crack open seams of shale – rock fracturing or fracking – and release the gas. This new technology is fast opening up a new frontier for the energy sector and simultaneously smashing long-held assumptions about dwindling global gas supplies. According to Stephen Chu, Nobel prize-winning physicist and US Energy Secretary, during a visit to Qatar in February: “The ability to unlock natural gas from shale rock has only come along in the last four or five years but now it could mean a doubling of US gas reserves.”

The US government still regards the shale gas explosion, however, as the opportunity to provide a “transitional fuel” on the way to a world of renewable energy. It might be a very long transition. Tony Hayward, CEO of BP, said in January that shale gas, along with coal-bed methane, promises to transform the US energy outlook for the next 100 years, while BP’s chief economist, Christof Ruhl, says that unconventional gas resources, now becoming increasingly available in large consumer regions of Asia and Europe, have the potential to become “a game-changer in global energy.”

Shale gas in the US (billion cubic feet)

	Proved reserves			Production	
	2007	2008		2007	2008
Total US	21,735	32,825	Total US	1,184	2,022
Texas	16,335	21,595	Michigan	119	118
Arkansas	1,457	3,831	Arkansas	93	279
Oklahoma	849	3,458	Oklahoma	36	151
Michigan	2,761	2,801	Montana	11	11
Louisiana	5	832	Kentucky	2	2
Montana	124	110	New Mexico	2	-
Pennsylvania	89	83	North Dakota	2	3
Eastern States	66	58	Eastern States	2	2
North Dakota	18	22	Louisiana & offshore	1	22
Kentucky	20	19	Pennsylvania	1	1
West Virginia	-	14			
Alabama & offshore	1	2			
New Mexico	20	-			

Source: EIA, VM Group

Next stop Europe

Shale gas is also coming to Europe. In the UK, facing a structural decline in North Sea gas supplies and which expects to double gas imports over the next ten years, shale gas offers one source of help. UK producer Igas Energy has announced plans to develop a shale gas resource extending across 300,000 acres in northern England. Chevron has recently acquired rights to explore for shale gas in Poland, joining other big players such as ConocoPhillips, ExxonMobil and Marathon Oil who all hope to do the same. Around 40 operators are now thought to be hunting for shale gas opportunities within Europe.

But it’s not a simple matter of just transplanting US expertise to Europe. The geology is very different and drilling into shale is a large, invasive operation that lends itself to wide-open, unpopulated spaces of the kind not commonly found across much of Europe. Even so, some estimates suggest that by 2015 there could be enough European shale gas available to displace the equivalent of about 20 Mt/year of LNG and about 60 Mt/year by 2020 – which would help release Europe from the current tight grip exercised over its natgas supplies by Russia.

Major gas producers, such as Russia, are getting worried about what the potential shale gas trend may mean for them. The Moscow business newspaper *Kommersant* talked in February of a “revolution” in shale gas production that may “fundamentally reshape the whole world gas market”. Gazprom has tried to appear unconcerned, at least in public, although a leaked document presented

to its board in February said its prospects for gaining market share were “aggravated by the so-called revolution in gas extraction from non-traditional sources” which could “fundamentally shift” world markets. On 9 February, Gazprom’s deputy chief executive, Alexander Medvedev, took a pot-shot at shale gas and its supporters, warning of the environmental risks associated with its exploration. But his warning was probably more a sign of the company’s nervousness than a reflection of genuine concern for the future of Europe’s potable water supplies.

Last year, Gazprom gas sales to Europe fell by 12% in volume terms, in the wake of lower demand and rising LNG imports, but the possible impact of shale gas could be much greater. The future of the Gazprom’s own Shokman LNG project now looks uncertain, because of the rising global gas surplus, and its bold plan to take 10% of the US natural gas market within five years increasingly looks like a pipe dream. Norway’s Statoil may now also limit investment in its vast Snoehvit field because of the US gas glut created by the emergence of shale gas. In mid-February, China’s Ministry of Land Resources said the country planned to raise shale gas production capacity by 15bn cm to 30bn cm annually; it aims to discover up to 30 large-scale fields with reserves of up to 1 trillion cm by 2020, although in order to do so it will need to recruit some outside expertise. In January, Sinopec and BP revealed that they were in talks to co-operate in shale gas exploration and development in China; Royal Dutch Shell and PetroChina have already launched a joint-venture shale gas project in southwest Sichuan province.

Some of the largest recent corporate deals in the energy sector have also had one eye on the prospects for shale gas profits. In December 2009, Exxon Mobil acquired Houston-based XTO Energy to enable it to exploit unconventional gas resources, while in February US services group Schlumberger agreed to pay \$11bn for Smith International, partly because of its involvement in shale gas technology. Most recently, BP announced an expansion of its US shale gas operations, which started in 2008, through a joint-venture deal in Texas. Other Asian players, such as South Korea’s KNOC and India’s ONGC, may also be doing shale gas deals this year if they get the opportunity.

US reserves keep on rising

Though the increasing use of shale gas has global implications, its first impact has been felt most strongly in the US, where research into extraction methods is most advanced and more geological work has been undertaken. In a report last summer, the independent US Potential Gas Committee raised its estimates of US natural gas reserves by one-third, while the Department of Energy is now predicting that shale gas could meet half of American’s total gas demand within two decades, turning the country into a new gas exporter. Last year, the US overtook Russia as the world’s largest natural gas producer. Fatih Birol, chief economist at the International Energy Agency, says that shale gas may account for 60% of US gas output by 2020 and that US producers will continue to invest in shale gas development at prices of above \$5/MMbtu; at the start of March Henry Hub contract and spot prices were, in one of the weakest markets in recent years, running just below that level.

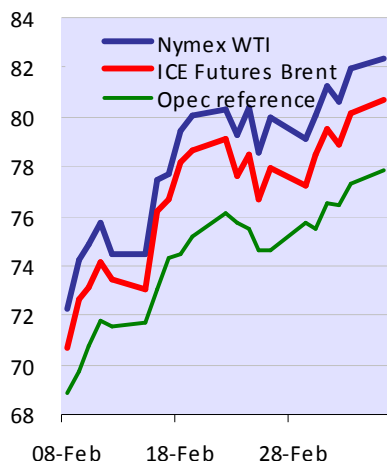
Suddenly, America is awash with gas and the rush to buy land at inflated prices has already got the politicians talking about state wellhead taxes to cream off revenue from the expected drilling boom. Most of the attention to date in the US has been on the vast Marcellus shale formation, which spreads from Pennsylvania across five states and is calculated to hold more gas than the largest fields in Qatar. Marcellus is, so far, the most profitable shale gas formation because it is of high quality, relatively close to the surface and near to consumers in the northeast market. It might be producing gas for the next 60 years at a peak rate of 13m cm a day. February saw trading and investment group Mitsui of Japan take a 32.5% stake in Anadarko Petroleum, the company that operates the Marcellus project, for \$1.4bn; it intends to spend a further \$3-

\$4bn in exploration and extraction, making Marcellus one of its largest energy investments.

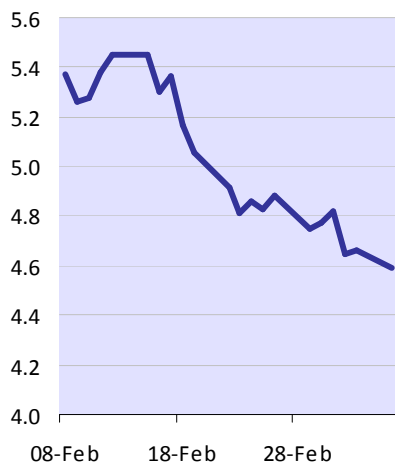
The shale gas revolution is not without its difficulties. Environmental considerations are inevitably critical and, while natural gas is said to be around 30% less carbon intensive than oil and 50% less so than coal when burned in modern plants, it still emits carbon, making it less attractive than renewables to lawmakers who are seeking to limit emissions. There is also evidence that shale gas wells may decline in output quite rapidly after the first twelve months, leading to some scepticism about its full potential in revolutionising gas markets; some in the industry already stand accused of underplaying the true rates of decline. In addition, shale gas drilling activity is accused of destroying the immediate local environment and is facing strong opposition within affected communities. The US House Energy and Commerce Committee in February launched an investigation into the potential impact of the hydraulic fracturing techniques used to extract unconventional gas and has now asked companies to provide details of the chemicals used in the process, warning that in pursuing a new source of energy a new set of health and environmental concerns are not being unearthed.

But as the race to secure potentially rich shale gas reserves heats up, many now believe the shale gas revolution is unstoppable. Consultants PFC Energy in Washington say the exploitation of shale gas will prove to be a “transformational event” and calculate that global reserves of natural gas from unconventional sources such as shale beds stand at 92 trillion cm, five times the level of conventional gas reserves. Charif Souki of Cheniere Energy does not doubt it. The man who bet the future of his company on America’s need to import gas by ship says that the gas will be found well beyond America’s shores and will be produced in huge volumes if the price is right. He cannot believe the scepticism about shale gas expressed by energy executives in Europe. He has heard it all before in the US – before the shale gas started flowing and his \$1.5bn port on the Gulf of Mexico found itself without customers.

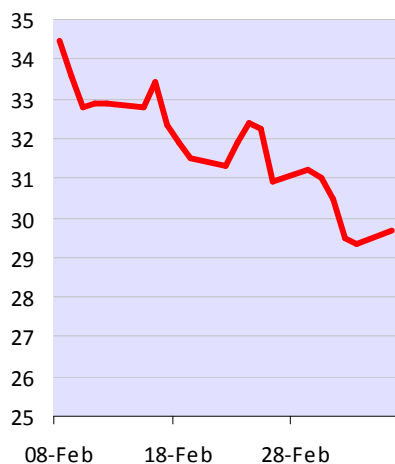
Key oil prices, \$/barrel



Source: Nymex, Opec, VM Group

Henry Hub natgas: Nymex 2nd pos. \$/MMbtu

Source: Nymex, VM Group

ICE Futures natgas: 2nd pos. pence/therm

Source: ICE, VM Group

Oil & Gas

News

- **Mar 4:** Sinopec said it would process 170m barrels of crude oil this year, up 11% on 2009.
- **Mar 3:** China's natural gas output should rise to 100bn cm in 2010, according to Sinopec, from 83bn cm in 2009.
- **Mar 3:** BP said it would raise its oil output by an average 1-2% a year up until 2015.
- **Mar 3:** Iraq's February oil exports reached their highest level – 2.06m barrels – since 1990.
- **Mar 2:** Gazprom and GDF Suez agreed to a deal to increase gas deliveries to France by around 10%.
- **Mar 2:** Britain will overtake Spain as Europe's largest buyer of LNG by 2020, according to BP.
- **Mar 1:** Saudi Arabia said it will double, to 280,000 barrels a year, its crude oil exports to India.
- **Feb 25:** US natural gas inventories in mid-February fell below year-ago levels for the first time in 13 months, the US Energy Department said.
- **Feb 25:** Iraq said it will not use foreign firms to develop more oilfields.
- **Feb 25:** Mexican oil output in January – 2.6m bpd – rose to its highest level in nine months.
- **Feb 24:** A consortium led by Eni of Spain proposed a \$1.2bn natural gas pipeline in the Philippines from Batangas to Manila.
- **Feb 15:** Gazprom Neft said it will raise crude output by 3% for the second year running in 2010, to 973,330 bpd.

Short term outlook

The first few days' trading in March saw crude staying a little over \$80/barrel, a level that appears tolerable to consumers and satisfactory to Opec producers, who have let compliance with quota reductions slip to around 53% – which means they have been producing 110,000 bpd more than agreed. Opec is due to meet in Vienna on 17 March where it is highly unlikely the organisation will do anything that might upset the present balance. The price of front-month Nymex crude has risen by almost 6% since early December 2009, boosted by unusually cold northern hemisphere winter weather, but oil for delivery in 12 months has fallen, leaving the forward curve to flatten out considerably; near-month oil traded at a near-\$9/barrel discount three months ago but it is now down to around \$2.50/barrel.

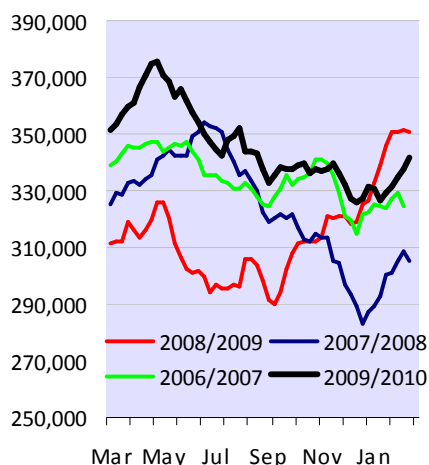
On the face of it, this is a bullish signal for oil prices and refinery runs in the US have climbed to their highest level since last October. But even if the market has tightened, it is hardly tight. Fundamental factors remain bearish and, barring a sudden rebound in industrialised world demand, crude oil supplies should be ample to meet current needs. A sustained rally up to the next level will need a run of underlying, positive economic news, much more than we have had recently. At the moment, good macroeconomic news is still jostling for dominance with the bad. The market is going to shuffle around the \$80/barrel level before it makes a firmer move either way.

Analysis

Gazprom in a tight spot on prices

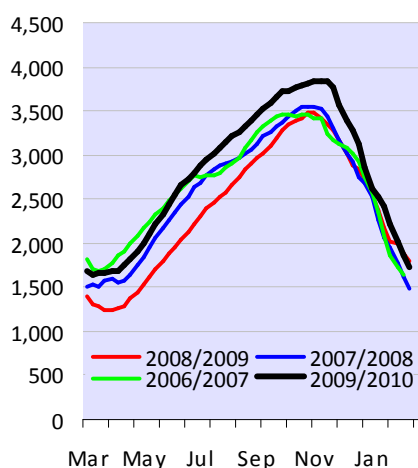
Could fundamental changes be underway in European gas markets, following Gazprom's decision to ease the oil-price link to gas delivery contracts? E.ON

US crude oil stocks, million barrels (excluding strategic reserve)



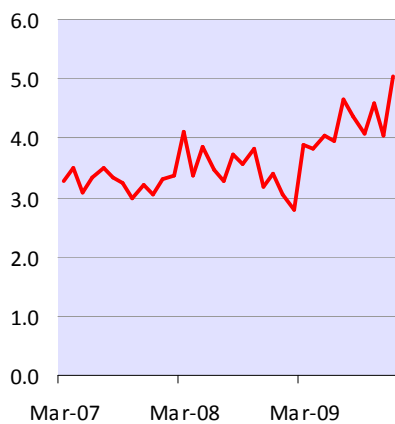
Source: EIA, VM Group

US natgas in underground storage, lower 48 states, billion cubic feet



Source: EIA, VM Group

China, oil imports, million bpd



Source: China Statistical Office, VM Group

Ruhrgas revealed on 19 February that Gazprom had agreed to link prices of a “small, double-digit percentage” of gas deliveries to spot market prices. The move, intended to try and help the Russian supplier defend its market share in Europe, could save E.ON up to €150m a year, though the effect could be reversed by rising spot market prices. No sooner had E.ON confirmed the shift than other Gazprom customers, including GDF Suez of France and Eni of Italy, declared that they too had renegotiated contracts along similar lines. Under take-or-pay contracts, they have been left to pay heavy penalties to Gazprom for not taking delivery of contracted volumes of gas. Their requests for changes to existing contracts follow the fall in spot prices to levels well below those for long-term contracts, in the wake of the economic slowdown and the rise of unconventional gas production. Liberalisation in the European market is also playing a part, with the gas supply market slowly becoming more competitive as the pipeline infrastructure opens up. Gazprom says that the shift to spot market pricing will affect between 10%-15% of the volumes sold to European customers and that the situation is only temporary, reflecting existing market conditions, and that within three years things will return to the status quo. But if the disconnect between spot and contract prices remains, Gazprom and other gas suppliers will be under more pressure to compromise. Algeria, which provides about 20% of Europe’s gas needs, was quick to say that it would not consider spot-price deals, although it said it was prepared to offer shorter contracts.

Nord Stream gets the all-clear

Talking of European gas supplies, Gazprom’s joint venture to build the \$10bn Nord Stream pipeline from Russia into Germany won the last necessary permit (on 12 February) to begin construction. The four states involved – Denmark, Sweden, Germany and Russia, have now all signed up to the pipeline. NordStream will begin laying pipes under the Baltic Sea in April, and the first gas is due to flow through the 1,220km pipeline in September 2011. The first phase will carry 27.5bn cm of gas annually; a second phase will boost that to 55bn cm, equivalent to two-thirds of Germany’s annual consumption. Gazprom claims it already has contracts to supply more than 20bn cm of gas through the line and hopes to raise its share of the European market from about 25% currently to 30% by 2015. In the meantime, the EU remains wary over the prospects for continuing Russian dominance of gas supplies, and on 4 March the European Commission pledged nearly \$300m towards the cost of rival pipeline Nabucco. The 3,220km route for Nabucco is planned to bypass Russia and deliver gas from around 2015 from the Caspian Sea region. The significance of the Commission’s move is that it is the first time that the EU has offered money towards building costs. The amount is trivial set against the projected \$11bn total cost, but it is hoped in Brussels that this will stimulate faster progress on the troubled project.

UK offshore potential remains

The UK’s oil and gas sector could still have some mileage left in it, if it gets the right backing from the government and works hard to cut costs and improve efficiency, according to a report published on 23 February by UK Oil & Gas, the industry trade body. It calculates that there are around 25bn barrels remaining beneath the seabed of the UK Continental Shelf and that the oil sector could still be delivering around 1.5m bpd up until 2020, compared with the 2.48m bpd it produced in 2009. The organisation claims that the number of projects currently under consideration for development has risen sharply over the last year, and says it has identified up to 11bn barrels of oil and gas in new and existing projects underway, requiring total capital expenditure of £60bn (£66.6bn) if they are to be fully exploited. However, it also highlights two main issues that have to be addressed. The report says £25bn (£27.75bn) needs to be spent within the next five years on basic infrastructure, while around 6bn barrels of “probable” reserves have yet to be confirmed as proven resources. In

the last year, proven resources have fallen from 6m barrels to 5.25m barrels. But although the number of new oil and gas projects under consideration appears to be encouraging, they will not halt to the remorseless production decline and falling investment levels seen in recent years. Nor will the halving in wholesale gas prices over the last year have done anything to help in this respect, either.

Global storage grows as prices fluctuate

The global move towards boosting oil and gas storage facilities continues, as consumer countries move to improve energy security and help offset the impact of volatile market prices. This month, China National Petroleum will start building a 6.2m barrel crude oil tank farm in the northern port of Tianjin, the latest initiative in the country's storage expansion programme called for by Beijing. China's strategic oil reserve levels and future plans are closely-held information, but the best estimates suggest that by the end of 2008 crude storage amounted to around 315m barrels while refined oil products storage capacity stood at 327m barrels. It is unclear how much extra capacity will be added under existing plans, although the likelihood is that refined products storage will reach 440m barrels by 2015. There is a risk that the building-frenzy now underway, which is focusing on storage for refined products, could result in an over-supply that leaves many tanks empty.

The other fast-emerging major Asian economy, India, is expected to complete its first emergency crude oil storage terminal by the middle of 2010; the country is committed to adding additional storage for use in emergencies of more than 100m barrels of oil, and the new facility, on the country's east coast, will account for nearly 10m barrels.

In the UK, meanwhile, the country's gas storage capacity could increase by as much as 30% after the government issued the first licence under a new regime to encourage the building of new facilities. The Gateway project in the eastern Irish Sea, comprising twenty new salt caverns, each the size of London's Royal Albert Hall, should be ready to take gas from 2014. Until recently, all UK offshore gas storage has been in the Rough Field in the North Sea, but a number of new projects are now coming forward. Although the UK's gas import capacity now represents about 125% of annual consumption – a 500% increase over the previous ten years – there is still criticism that the country has left itself vulnerable to higher prices because of its inability to buy gas for storage when prices are lower.

US gas drilling defies demand slump

Natural gas prices in the US may be down by 14% since the start of the year, but that's not stopping gas companies from increasing their drilling activities. The drilling rebound, which started last summer, is keeping output higher, bucking predictions that it would fall along with prices. Gas production in the lower 48 states has declined by just over 1% since its peak in February 2009 and actually rose slightly in December, a trend which may now continue, given rising interest in shale gas reserves. The US Energy Department said in February that domestic natural gas production in 2010 is expected to fall by 2.6% from 2009 levels, with consumption up by 0.4% from 2009 demand levels. The government is expecting Henry Hub prices to rise 32% over 2009 levels to about \$5.36/MMBtu during 2010, although this level could be easily exceeded if the economic rebound takes off, despite the high level of inventories.

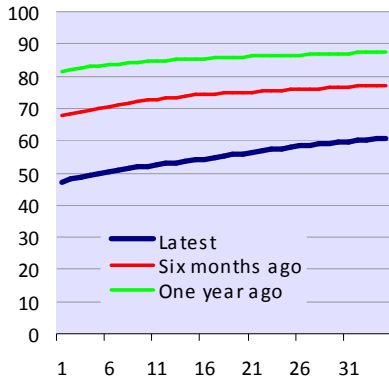
Warning shots from Moscow

It all sounds a bit familiar. Moscow issues a warning over possible contract violations to a foreign oil company operating in Russia, which then says it is ready to sell to Gazprom the interests at the centre of the row. Yuri Trutnev, the Russian natural resources minister and the man whose past interventions have spelled trouble for foreign operators, claimed in February that TNK-BP could

lose its licence to develop the Kovykta gas condensate field, where, according to Moscow, production has been falling below contractual levels. This was followed by a statement from TNK-BP saying that it was ready to sell its stake in Kovykta, in which it has invested \$664m, to the Russian gas monopoly. In 2007, TNK-BP agreed to sell its 62.8% stake in Rusia Petroleum, which holds the licence for the Kovykta field, to Gazprom for between \$700-\$900m but talks broke down. A retreat for TNK-BP from Siberia looks imminent.

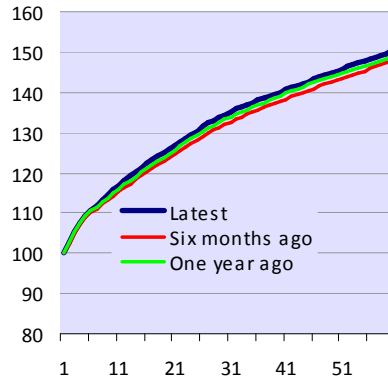
Oil and gas data

WTI crude forward curve, Nymex, month 1-40, \$/b



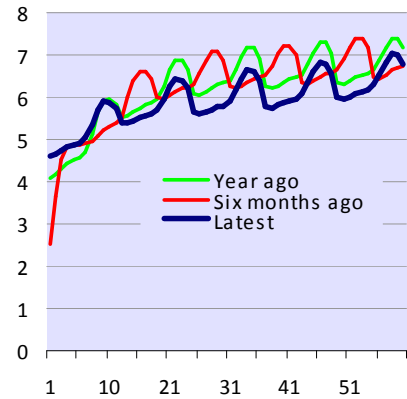
Source: VM Group

Brent crude forward curve, ICE Futures, month 1-60, 1st=100



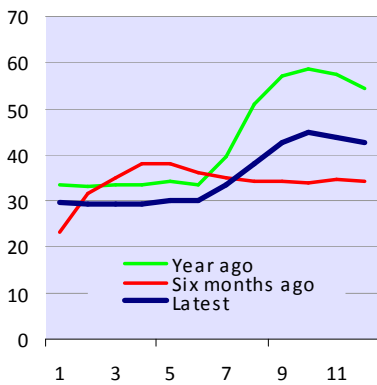
Source: VM Group

Henry Hub natgas forward curve, Nymex, month 1-60, \$/MMbtu



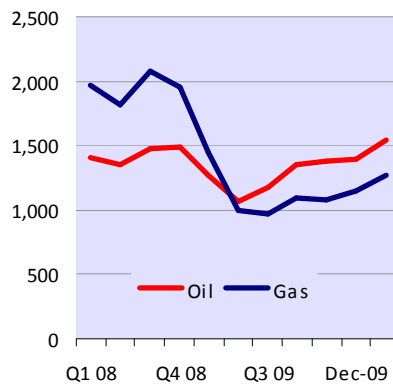
Source: VM Group

Natgas forward curve, ICE Futures, pence/therm



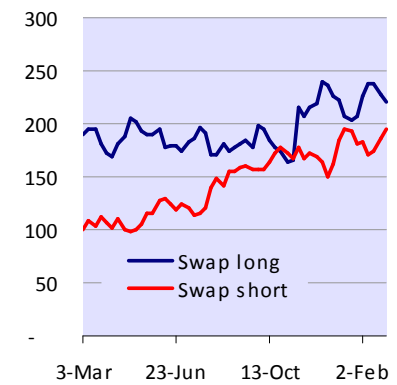
Source: VM Group

Global rig count, oil and gas



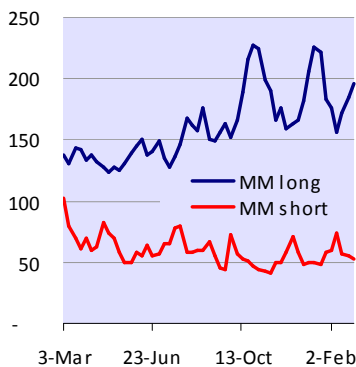
Source: VM Group

Nymex crude oil swap dealer positions (000 lots)



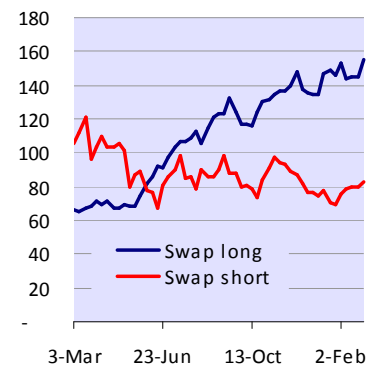
Source: CFTC

Nymex crude oil managed money positions (000 lots)



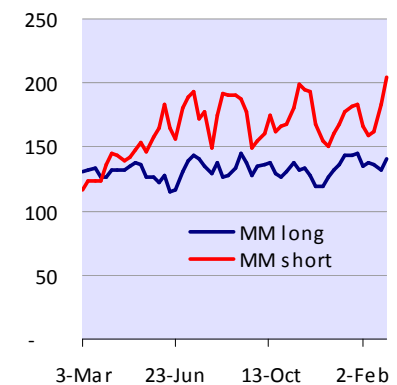
Source: VM Group, CFTC

Nymex natural gas swap dealer positions (000 lots)



Source: VM Group

Nymex natural gas managed money positions (000 lots)



Source: VM Group

Refining

News

- **Mar 4:** Global floating storage of clean petroleum products fell by 9m barrels to 71m barrels in one month, according to broker ICAP Shipping.
- **Mar 3:** Saudi Aramco said it had 4m bpd of crude spare capacity, in addition to its daily output of 12m barrels.
- **Mar 1:** Indian Oil Corporation increased jet fuel prices by 3.5%.
- **Mar 1:** Kuwait Petroleum Corporation said it expected to win approval for a \$9bn, 300,000bpd refinery in China by the end of this year.
- **Feb 25:** Royal Dutch Shell said it would shut for repairs a 200,000bpd diesel unit at its Godorf, Germany, refinery in April.
- **Feb 24:** Refinery output in India grew 3.8% in January compared to a year earlier, the government said.
- **Feb 22:** Petrobras of Brazil said it imported 1.2m barrels of gasoline in February because of domestic shortages.
- **Feb 17:** Lukoil of Russia said it was open to opportunities to acquire more refineries after some recently completed downstream purchases in Europe.
- **Feb 16:** BP said that refining margins were unlikely to improve substantially in 2010. It said margins averaged \$4/barrel in 2009, \$2/barrel below the last 10-year average and well below the \$10/barrel of 2007.
- **Feb 15:** Kuwait said it will re-examine plans to build a 615,000bpd refinery and to upgrade two others after the \$30bn project stalled.
- **Feb 12:** Russian prime minister Vladimir Putin issued a probe into the legality of small oil refineries. More than half the country's 196 small refiners are believed to be operating without licences.

Short term outlook

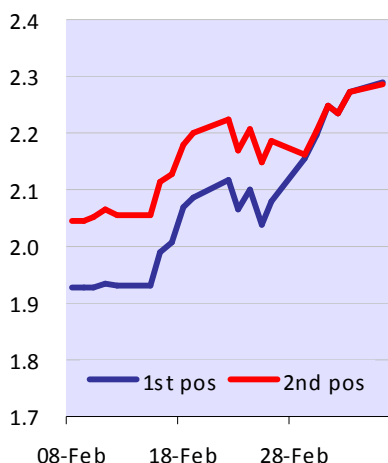
It may not seem to make much sense, given that the US economy remains weak, but the cost of gasoline continues to edge up. Prices have been rising, even though demand remains fairly flat, with the total number of miles being driven showing little change in recent months, according to the Federal Highway Administration. But, then again, crude oil prices are twice what they were a year ago and wholesale fuel prices have been ticking upwards, as refiners start the switch to more expensive summer blends of gasoline designed to meet tougher pollution standards. By 1 March, the average price for regular gasoline in the US hit \$2.70/gallon, up 5 cents in a week, leaving it \$0.77/cents higher than a year before. It will not take much of an upturn in demand to see a gallon of gas back above \$3/gallon, a level it last reached in October 2008.

Analysis

India keeps a grip on its fuel prices

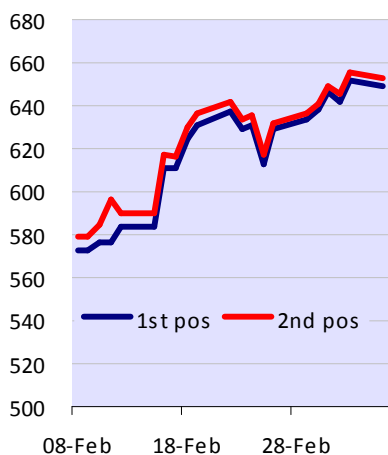
Hopes that India might finally get round to deregulating its petroleum product market took a dive on 26 February, when the government raised gasoline and diesel prices, a move which critics claimed will fan inflation and offer only limited relief to oil refiners and marketing companies. The price hikes – 6% for gasoline and 8% on diesel – came only three weeks after a government committee, set up to find a viable and sustainable system for petroleum product pricing, recommended that the government should end price controls. Before the new increases, gasoline sold for the equivalent of about \$0.96/litre and diesel for \$0.69/litre. Without deregulation, some fuel prices could possibly rise by a further 15% beyond the latest announced levels. The hikes came after the government levied a new excise duty on gasoline and restored a basic customs duty of 5% on crude oil, 7.5% on diesel and gasoline and 10% on other refined

RBOB unleaded gasoline, Nymex, \$/gallon



Source: Nymex, VM Group

Gasoil, ICE Futures, \$/tonne

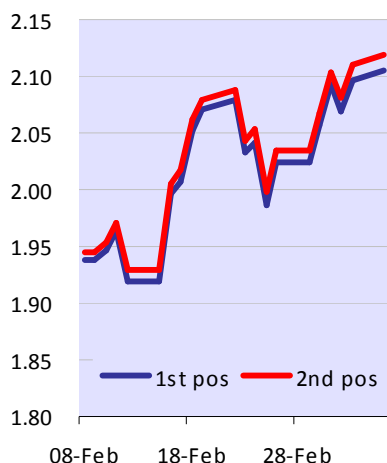


Source: ICE, VM Group

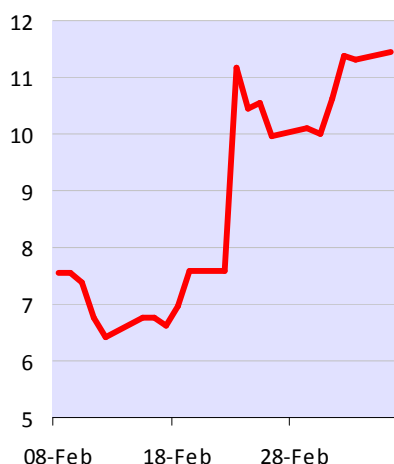
Monthly US vehicle miles, annualised rate, trillion



Source: US Department of Transportation, VM Group

Heating oil, no.2, Nymex, \$/gallon

Source: Nymex, VM Group

Nymex WTI : 3:2:1 crack spread, past month, \$/barrel

Source: Reuters, VM Group

Nymex WTI : 3:2:1 crack spread, past 12 months, \$/barrel

Source: Reuters, VM Group

products, starting 1 April. The fuel price changes will do little more than offset these tax rises. India's three largest oil refiners are expected to report total losses of some \$10bn in the financial year ending March 2010 – they might have faced an extra \$2bn in losses if the new taxes had been implemented without retail price rises. Despite widespread opposition to the decision – opposition parties walked out of the government's budget presentation in parliament – Indian prime minister Manmohan Singh ruled out any reversal of the policy, claiming the price rises would have a minimal inflationary impact. Deregulation will have to wait for another day.

France fixes refining summit

France came close to the prospect of gasoline shortages in February, following the walk-out of workers employed by Total, which owns half of the country's twelve refineries and supplies 50% of the country's fuel. The immediate crisis may have been averted, following the intervention of president Sarkozy and a pledge by Total not to sell any of its French refineries for five years – a deal that did not cover the plant at Dunkirk, where closure plans gave rise to the original protests. Total's problems merely reflect the wider crisis facing the European refining sector. Total is losing €100m a month from its European refinery business, crushed by sinking demand and higher oil prices. Chronic over-capacity in Europe sees refiners now currently running at around 81% of potential production, down from 92% at the start of 2008, leaving the big refiners to reassess their operations; Total says it needs to trim around 20% of its global refining capabilities. Given the reaction of French workers to the prospect, the chances are it will try and find easier places in which to cut back operations. The upshot of Sarkozy's intervention is that the government will hold a roundtable meeting with oil industry representatives on 15 April to discuss the future of the struggling refinery sector. It was a meeting forced on them as part of a deal to get Total strikers back to work, but the problems facing refiners are not going to be settled by politicians merely interested in avoiding politically-costly redundancies.

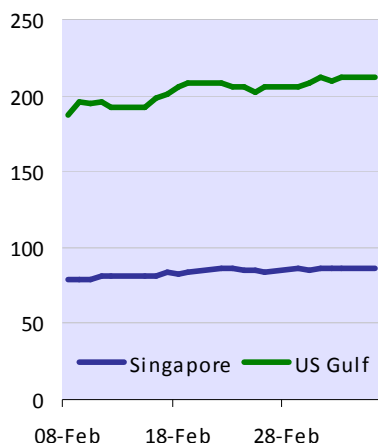
And European gasoline prices tick upwards

The Total strike also had some bearing on an end-of-month tick up in European gasoline prices, which rose to their highest level for nine months. Barges of benchmark RBOB gasoline rose to \$750/t, boosted also by strong demand out of West Africa and the Middle East, where refinery problems have curbed supplies. An extra lift was given as refiners in the US started the switch to blending more expensive summer specification motor fuel, with traders expecting to ship gasoline ahead of the peak-demand driving season.

Barrelling into the Bahamas

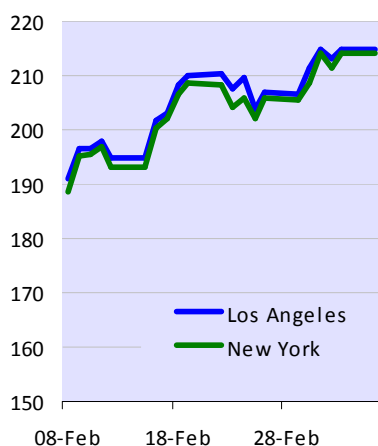
As though US refiners don't have enough problems on their hands, the newest threat to their wellbeing is taking shape off the coast of Florida. The island of Grand Bahama is home to the Borco oil storage terminal, which is in the process of being expanded, taking its total capacity to 27.5m barrels. Before the acquisition, Borco's useable capacity had dropped to around 12m barrels. "If you are on the east coast, you had better be ready for competition", says Tim Day, managing director of First Reserve, the Connecticut-based private equity firm that bought the site in 2008 with Dutch partner Vopak. Unlike most of the terminal's existing storage, set aside for heavy or crude oil which is shipped to US refineries for processing, the new capacity will be devoted to already refined light products such as gasoline, diesel, jet fuel and heating oil. Many of the light refined products could be shipped in from new refineries springing up in Asia and the Middle East, and the operators claim that big refiners such as Reliance Industries have expressed interest in using it. The scenario may look strangely at odds with a US fuel market that is stagnant and, in some cases, may have gone ex-growth, but it still remains a huge consumer. While Asia has the fastest-growing market for oil products, its refining capacity may grow even

Kerosene, Singapore & US Gulf Coast, cents/gallon



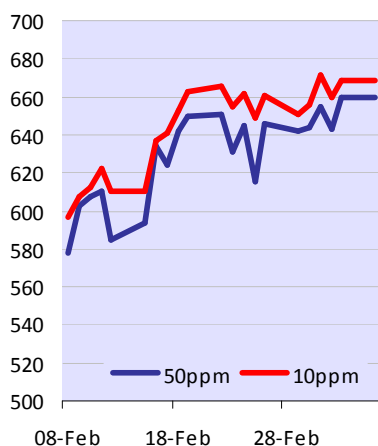
Source: VM Group, Reuters

Diesel, no.2, FOB, Los Angeles/New York, cents/gallon



Source: VM Group, Reuters

Diesel, Europe, low-sulphur, NWE (10ppm) & MED (50ppm), \$/tonne



Source: VM Group, Reuters

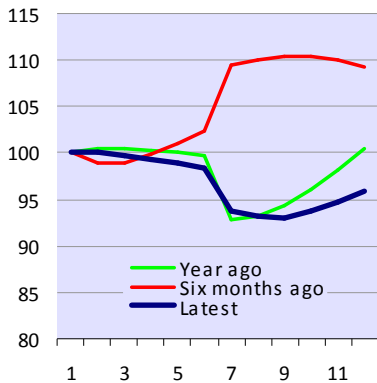
quicker than demand, creating a glut that needs to be stored or taken up in other regions. China, for example, became a net exporter of refined oil at the end of last year, for the first time since 1993. Excess domestic capacity could increasingly see it trying to sell into western markets, something that would be made easier with the provision of storage facilities on the scale of the Borco facility. A flood of new fuel from overseas would only further squeeze US refiners such as Valero and Sunoco who have several plants each on the east coast. For them, Borco could change the name of the game.

Earthquake forces Chilean diesel imports

Bio Bio, Chile’s largest oil refinery located at Concepción, could be down for more than a month after the earthquake that rocked the country at the end of February. Together with the Aconcagua refining complex near Santiago, which was only temporarily out of action, the two refineries together have a total capacity of 220,000 bpd. Chile’s state energy company ENAP at once stepped up diesel imports, saying it had sufficient stocks to last only 10 days. Gasoline inventories would last two weeks. At least 170,000t of clean products, mainly diesel, will be shipped from Asia (South Korea and Japan) while traders also expect US west coast refiners, large suppliers to Chile in the past, to help overcome any gasoline shortages. California diesel and gasoline premiums to futures widened on speculation that west coast exports would rise, although the fillip to the market should be short-lived, unless Bio Bio remains out of operation for longer than was initially thought likely.

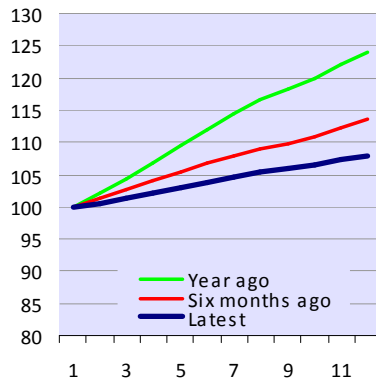
Distillates data

RBOB unleaded gasoline, Nymex, forward curve (1st month =100)



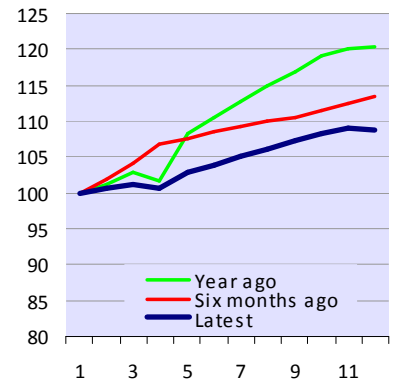
Source: Nymex, VM Group

Gasoil, ICE Futures, forward curve (1st month = 100)



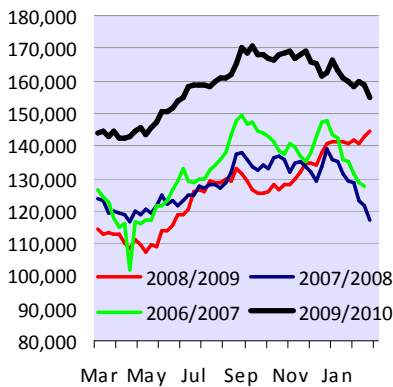
Source: ICE, VM Group

Heating oil, Nymex, forward curve (1st month = 100)



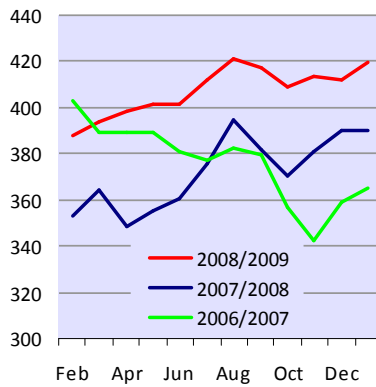
Source: Nymex, VM Group

Distillate stocks, US, 000 barrels



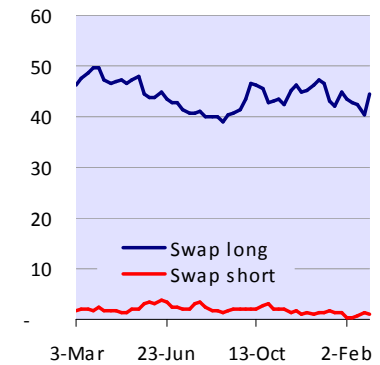
Source: API, VM Group

Distillate stocks, EU15 & Norway, million barrels



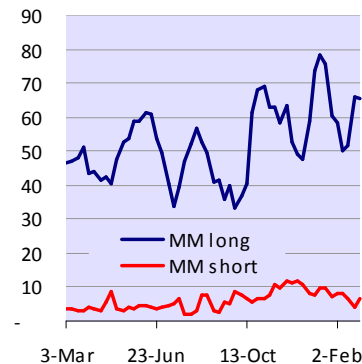
Source: VM Group

RBOB unleaded gasoline, Nymex, swap dealer positions (000 lots)



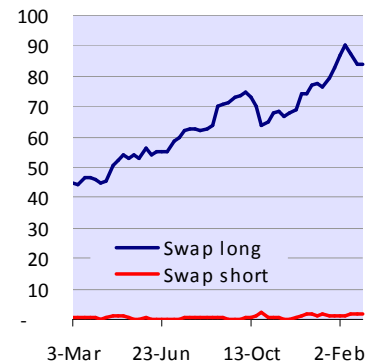
Source: CFTC, VM Group

RBOB unleaded gasoline, Nymex, managed money positions (000 lots)



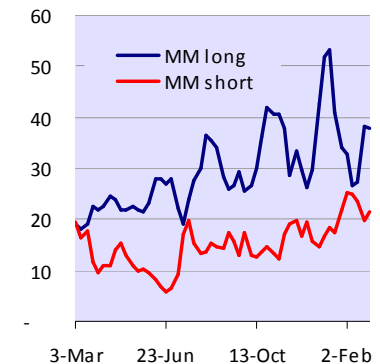
Source: CFTC, VM Group

No.2 heating oil, Nymex, swap dealer positions (000 lots)



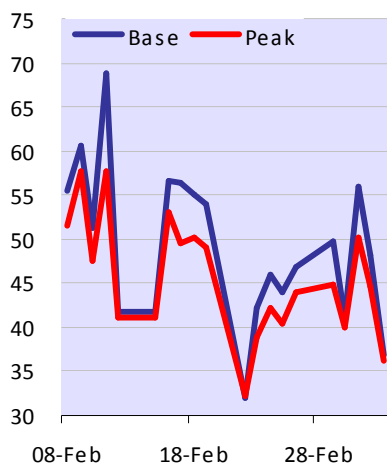
Source: CFTC, VM Group

No.2 heating oil, Nymex, managed money positions (000 lots)



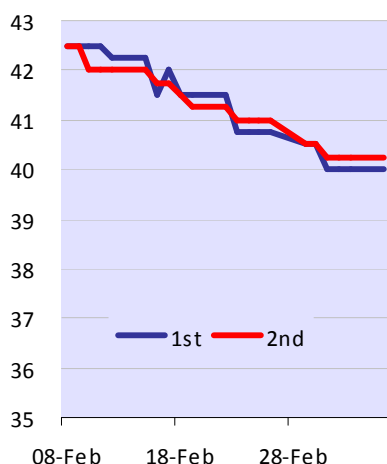
Source: CFTC, VM Group

US electricity prices, PJM, base and peak, \$/MWh



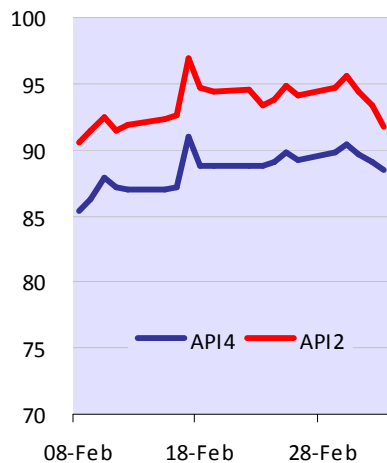
Source: PMJ, VM Group

Uranium prices, Nymex, \$/pound



Source: Nymex, VM Group

Coal prices, API2 and API4, \$/tonne



Source: Reuters, VM Group

Power

News

- **Mar 4:** China's five largest power producers called on the government to impose a price ceiling on thermal coal supplies.
- **Mar 4:** Electricity Generating, Thailand's second-largest power producer, plans to invest \$1bn to raise generating capacity to 5,200 MW.
- **Mar 3:** Gas will be the source of more than one-third of Australia's electricity generation by 2030, the federal government said.
- **Feb 28:** Iran said it wanted Japan to help it build nuclear power stations.
- **Feb 28:** China's daily electricity consumption during its week-long Spring Festival holiday in February rose nearly 30% v. the year before.
- **Feb 27:** Mining group Xstrata was reported to be negotiating an annual coal supply contract with Japan's Chubu Electric at \$100/t – up more than 40% from last year.
- **Feb 26:** India said it plans to levy a \$1/t clean energy tax on domestic and imported coal.
- **Feb 21:** China said its national coal output will reach 3.3bn tonnes in 2010.
- **Feb 20:** E.ON, Britain's second-largest power producer, said UK energy prices would have to reflect the cost of maintaining back-up supplies, even when output from renewable energy rises.
- **Feb 19:** Vietnam's coal and energy producers said the country would have to start importing coal from 2015 to help meet rising power demand. By 2020, imports could reach 100 Mt/year.
- **Feb 13:** The Abu Dhabi Water and Electricity Authority began selecting a developer to take a 40% share in its 1,600 MW Shuweihat S3 power plant.
- **Feb 12:** Coal imports by state-run Coal India could hit 6 Mt-10 Mt in 2010/11, up from 1.7 Mt in the current fiscal year, the company said.
- **Feb 11:** Waratah Coal of Australia said it had discovered additional coal reserves of 3.48bn tonnes of coal at its North Alpha project in Queensland.

Short term outlook

The US winter is going down on record as the coldest for a decade and one of the coldest in the past 100 years – good news for a coal industry that saw prices plunge from a record \$143/t in July 2008 to a little over \$48/t by the end of 2009, the steepest fall in eight years. Record levels of stockpiles have been eaten into, with utilities now holding around 57 days' worth of coal in hand, down from more than 70 days at the start of winter. China's appetite for coal is also growing, diverting supplies from Europe and giving US east coast producers the opportunity to sell across the Atlantic. The result is a rally in prices that has taken them up by around 20% from their 2009 low point – the rising price trend could continue as winter drags on, while economic recovery would certainly push them further upwards, although the glut of natural gas at around \$5/MMbtu could act as a constraint.

Analysis

Putin warns the power men

Some of Russia's biggest privately-owned power generators came in for some stinging criticism from prime minister Vladimir Putin in February, who accused them of failing to pursue investment programmes that would boost generating capacity, at a time when the nation's power supplies are under increasing pressure. In an unwritten agreement at the time of the sell-off, the businessmen said they would spend billions of dollars to buy up the constituent parts of the Unified Energy System, the state's electricity monopoly, in exchange for market liberalisation and a framework for a viable electricity market. Putin singled out four tycoons in particular for failing to upgrade capacity, despite pledges that they gave when the plants were privatised three years ago. He

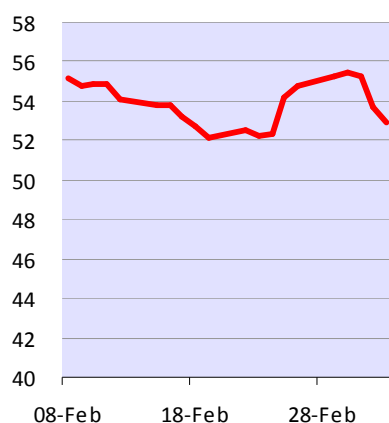
warned them that they could face large fines or, more importantly, be denied access to liberalised electricity markets unless they improved their investment records. The removal of assets from their control, however, looks unlikely. Russia launched its power sell-off in 2007 in the face of record power demand and overloaded supply networks, but the urgency behind the drive for much-needed new investment waned when the economic downturn hit and the oligarchs who took control of the power generators persuaded Moscow to let them delay spending programmes. But the stirrings of an economic recovery and severe winter weather have again boosted power demand, driving it back up to levels last seen in 2008. Putin said that the generating companies now had to step up investment programmes and contrasted them with the approach of foreign energy operators who had also participated in the sell-off and managed to maintain their investment obligations. He pointed out that only 38 out of 100 power stations originally planned for this year were being built. As part of the country's power sector reforms now underway, a new system of tariff controls and tax changes for power providers is due to take effect next year in the hope it will further encourage new investment.

India reduces China's role in power sector

India is trying to rein-in its heavy dependence on Chinese expertise as it struggles to expand its power generation to keep in step with its economic growth. The country is struggling to boost power output by 60% over 2007 levels by 2012 and has been using low-cost Chinese contractors and equipment suppliers to help meet its targets; estimates suggest Chinese companies are now supplying equipment for about 25% of the new power generating capacity being added to the national grid but now the authorities are scaling back co-operation and seeking instead to ensure that India develops its own capabilities. Visa regulations have been tightened up, forcing several thousand Chinese workers to leave the country and provoking protests from the Chinese authorities. The country's Central Electricity Authority, the top planning body for power projects, has called on state-controlled power companies to use only Indian equipment on all forthcoming major projects and there are government proposals to tax Chinese power-related imports. Ministers point out that plant suppliers like Bharat Heavy Electricals, which can currently service only about half the power capacity that India is planning to add every year, are to double production and so make equipment imports less vital. But there must be a big question mark over India's ability to rely largely on its own resources to meet such an ambitious power generation expansion programme.

Venezuela struggles with power shortage

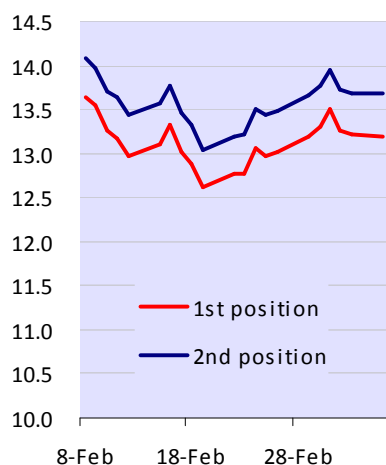
Venezuela's power shortages, exacerbated by a drought that has knocked out critical hydropower generating resources, have become so severe that it is being forced to consider buying supplies from Colombia, even though the two countries have been locked in a diplomatic and trade dispute. Venezuela's electricity minister, Ali Rodriguez, was forced to admit that it may have to import power from Colombia, which has reportedly offered to supply some of its own surplus, to help it resolve a crisis that has seen power rationed through rolling blackouts and a decree that limits the use of electricity in commercial premises. Ministers, however, are suspicious of the offer, which they say may have been made merely to "put Venezuela on the defensive". The Venezuelan government said in February that it intended to boost installed capacity by 17% this year, taking the total to 28 GW; much of the new capacity will be in the form of oil and gas-fired thermo-electric plants. The country currently exports some power to Brazil, but the Brazilians have now offered to reverse the process.

Coal price, Nymex, 1st position, \$/short ton

Source: Nymex, VM Group

Guaranteeing a US climate deal?

President Obama's decision on 17 February to pledge a conditional \$8.3bn loan guarantee to aid the construction of two nuclear reactors in Georgia – the first nuclear plants to be built in the US in more than three decades – brought the strange sight of a Democratic president getting three cheers from the nuclear power sector, while the political left hammered him for creating a “dirty, dangerous distraction” from the real search for clean energy. Obama's initiative may well turn out to serve well his administration's broader political push for a bipartisan approach for climate legislation this Spring. The closer the November midterm congressional elections come, the poorer the prospects for the promised cap-and-trade framework to which Obama is committed. The White House hopes that the nuclear guarantees provide evidence of its willingness to invest in an energy sector dear to many Republican lawmakers; in return, he will want help in steering through his broader plan for a low carbon emission regime. The most strident nuclear critics won't bite, but with guarantees now being considered for four more nuclear stations, the President may be able to win over sufficient support to get through a climate package that is considered an essential prerequisite to any post-Kyoto deal.

CO₂ prices, EEX, €/tonne

Source: Nymex, VM Group

World Cup powers ahead

Forget all the scare stories surrounding unsold World Cup tickets – the real concern is whether South Africa will be able to keep the lights on during the tournament, which falls during a period of peak winter demand. The country has become used to rolling blackouts since 2007 and, although the situation has improved recently, the supply-demand balance is very tight. State utility Eskom insisted on 2 March that it has enough capacity to meet the rise in demand loads while the sporting event is underway. Normal peak winter demand reaches about 37 GW and Eskom says it should have a generating capacity, including imports, of 43.5 GW; it has asked normal customers to reduce demand while the finals are being played and there will also be minimum maintenance to minimise power outages. Even if Eskom scrapes through the World Cup unscathed it admits that the supply situation for next year and beyond is “a serious concern”, with the possibility that peak capacity requirements may not be met. It was disclosed on 3 March that South Africa is seeking Britain's support for a \$3.75bn World Bank loan for the hard-pressed power sector, an issue raised during president Jacob Zuma's visit to London. The decision by the South African power regulator to limit Eskom's proposed 35% rise in tariffs to 25% has made the need for the loan even greater.

CO₂ prices, €/tonne, Year 2 and Year 3

Source: VM Group, Nordpool

Pirates raise premiums

Booming demand for South African coal in Asian markets is also turning into something of a bonus for Somalian pirates. Asia, led by China and India, will take 75% of South Africa's 65 Mt of thermal coal exports this year as demand shifts from a glutted European market. The number of attacks last year on dry bulk carriers in the Indian Ocean hit 109, the highest since 2003, and while oil tankers and passenger ships have proved the most popular targets, pirates are now setting their sights on slow-moving carriers lying low in the water, including coal carriers. Last October, a Chinese coal ship was hijacked and ransomed for \$4m. The higher the risk is from pirate attacks, the higher insurance and freight costs will go.

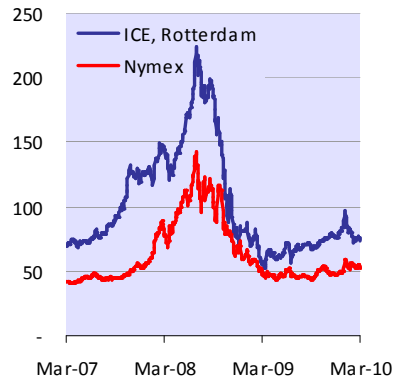
Power data

Uranium price, Nymex, \$/pound



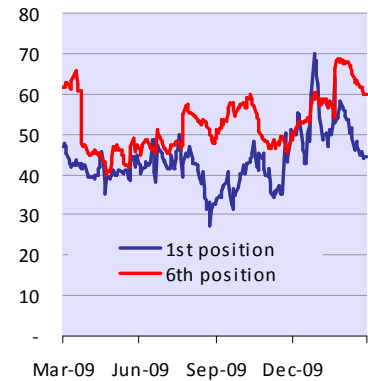
Source: VM Group, CFTC

Coal prices, \$/tonne (ICE, Rotterdam) and \$/ton (Nymex)



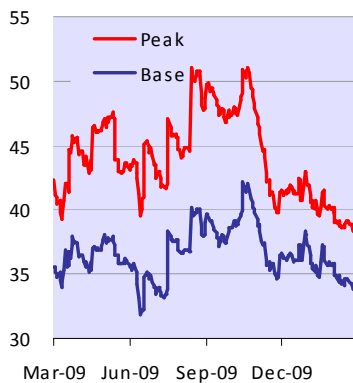
Source: VM Group

US electricity prices, PJM Interconnection, peak, 1st and 6th position, \$/MWh



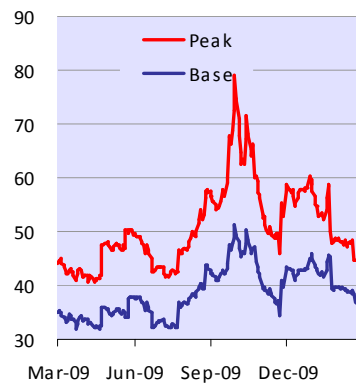
Source: Department of Transport, VM Group

UK electricity prices, peak and baseload, 1m ahead, £/MWh



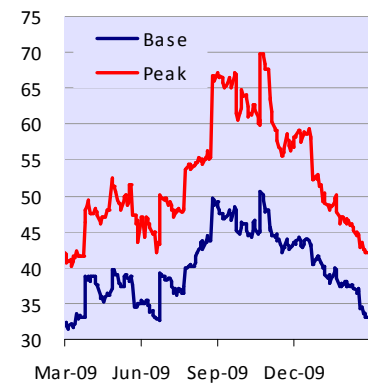
Source: VM Group

German electricity prices, peak and baseload, 1m ahead, €/MWh



Source: VM Group.

Netherlands' electricity prices, peak and baseload, 1m ahead, €/MWh



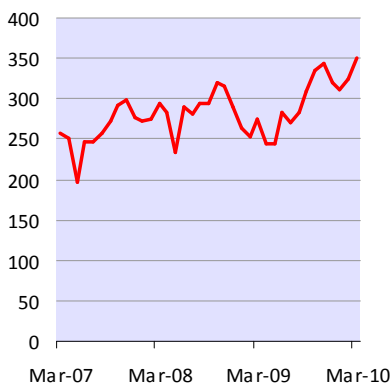
Source: VM Group.

Coal production, US & China, Mt/month



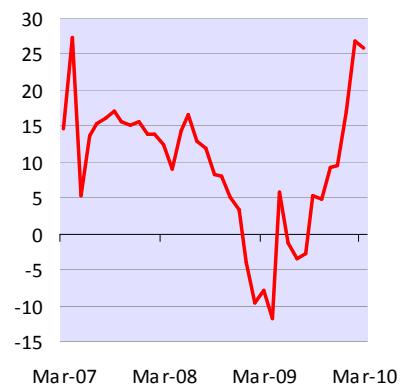
Source: US Department of Energy, China Statistics Office, VM Group

China, electricity production, monthly, tWh



Source: China Statistics Office, VM Group

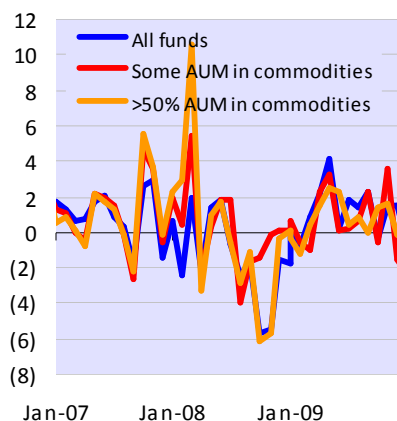
China, electricity production, monthly, y-on-y % change



Source: China Statistics Office, VM Group

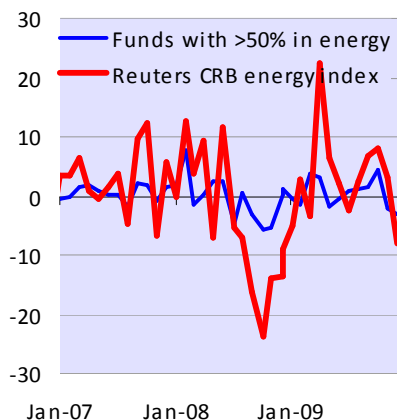
Fund activity

Hedge fund returns by commodity weighting



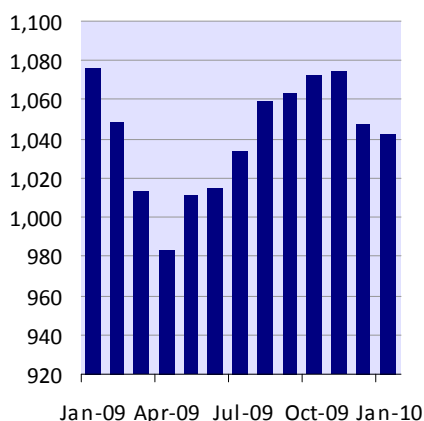
Source: VM Group, Barclay Database

Hedge fund returns in energy % monthly



Source: VM Group, Barclay Database

Hedge funds AUM \$bn



Source: VM Group, BarclayHedge

News

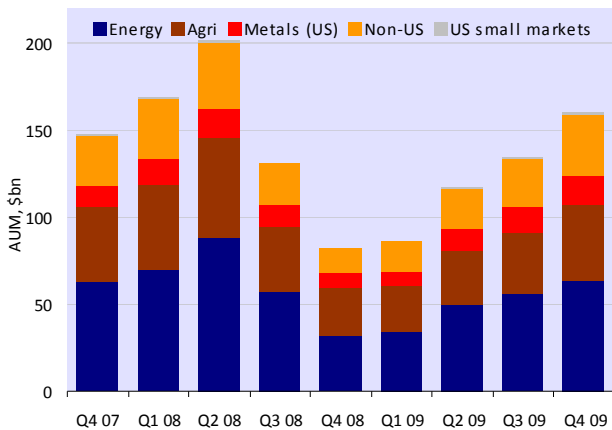
- Mar 4:** The US Justice Department is investigating whether hedge funds coordinated bets on the weakness in the euro, and in so doing exacerbated its recent fall. Funds including SAC Capital Advisors, Greenlight Capital, Soros Fund Management and Paulson & Co. have been asked to hold onto trading records relevant to euro trading. Establishing whether there was collusion to push the euro lower than it might otherwise have been will not be easy in the context of obvious macroeconomic reasons for euro weakness, such as the difficulties in Greece over its debt burden.
- Feb 25:** The International Organisation of Securities Commissions (IOSCO) published an advisory template for supervisors covering 11 different types of data hedge funds will be expected to provide on a regular basis from September this year. The list includes: manager’s name; number of funds; geographic spread; equity owners; names of auditors; custodians; performance; redemptions; assets under management; valuations of long and short positions across assets; liquidity of fund assets; value of fund borrowings; net credit counter-party risk; and ten largest positions held by the fund. The IOSCO has power to impose such requirements, although its members, including the US Securities and Exchange Commission, regulate the majority of the world’s securities markets in more than 100 countries.
- Feb 23:** According to a study by the UK’s Financial Services Authority (FSA), levels of leverage in the hedge fund industry are relatively low. According to information from the UK-based hedge fund firms and prime brokers surveyed, funds were borrowing \$102 for every \$100 taken in from investors. Considering both long and short positions held directly or via derivatives, the average size of fund presence represented 328% of investor assets. The FSA concluded that this data showed a “contained” level of systemic risk. The research also suggested that the sector’s influence on share trading was minimal – the top 50 hedge funds, representing around 20% of total global hedge fund assets, control less than 1% of the combined European stock market.

2010: difficult start

Final data shows that January turned out to be a testing month for hedge funds, with average returns slipping into the red by 0.49%. Commodity funds were worse hit than the rest, down 2.30% on average, while those with selective commodity-specific strategies fared even more poorly, all down by over 3%. Energy funds were down 3.05%, metals’ funds were down 3.41% and softs funds fell 3.47%. February returns are expected to offer a mixed bag but should show some recovery in the broader sector, if not for commodity funds. Assets under management dipped in January from \$1.047 trillion to \$1.042 trillion. According to CFTC data released on 5 March, hedge funds and other managed money speculators trimmed their net-long position in Nymex crude oil from 144,058 to 132,504 net longs, while continuing to be short of natural gas on Nymex. Money managers, including commodity trading advisors and hedge funds, held 147,330 net short natural gas futures, up from 130,902 in the previous week, as of 2 March.

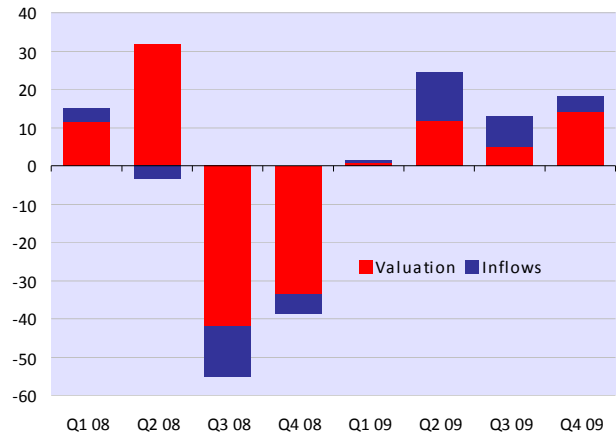
Index fund investment data

Net index fund positions by type of commodity, \$bn



Source: CFTC, VM Group

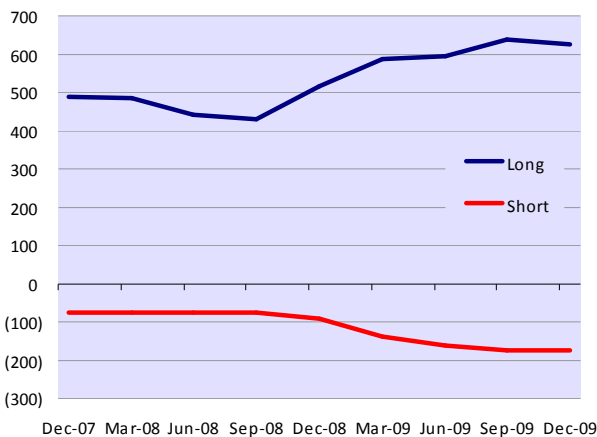
Net quarterly change, \$bn (long-contracts and US markets only)



Source: VM Group calculations from CFTC data

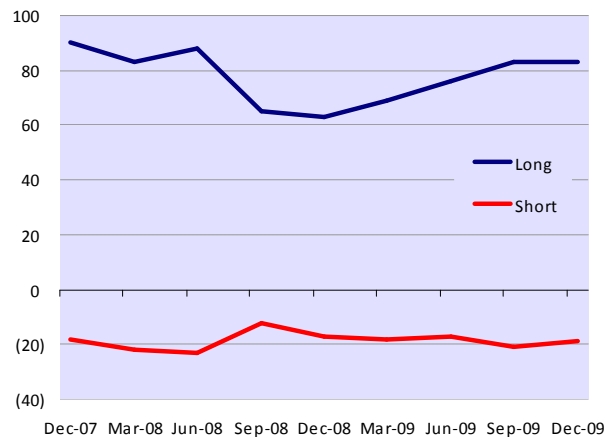
Note: Split between valuation and inflows is approximate.

Nymex WTI crude oil index positions, long & short, 000 lots



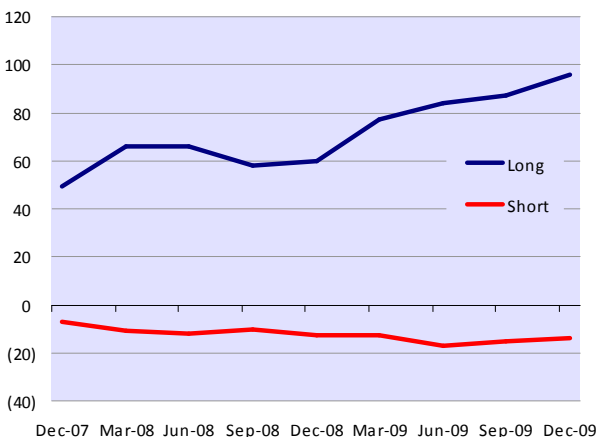
Source: ICE Futures US, VM Group

ICE heating oil index positions, long & short, 000 lots



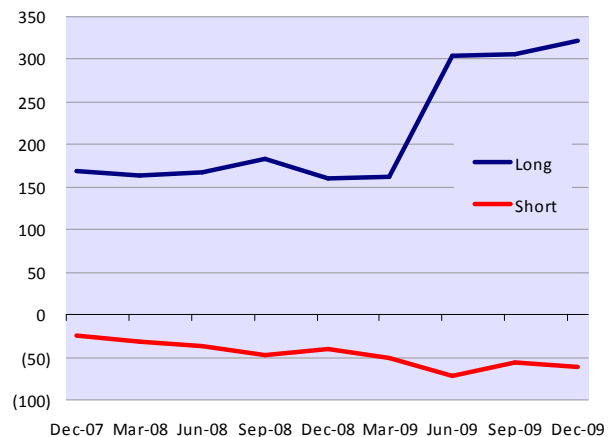
Source: VM Group calculations from CFTC data

Nymex RBOB gasoline index positions, long & short, 000 lots



Source: VM Group calculations from CFTC data

Nymex natural gas index positions, long & short, 000 lots



Source: VM Group calculations from CFTC data

The Index Fund investment data is adapted from the CFTC's Quarterly Index Investment Data release. The next release will be in early May 2010.

Prices over last three years

Crude oil, Nymex, \$/b



Source: Nymex, VM Group

Natural gas (Henry Hub), Nymex, \$/MMbtu



Source: Nymex, VM Group

Natural gas, ICE Futures Europe, pence/therm



Source: ICE Futures, VM Group

RBOB gasoline, Nymex, \$/gallon



Source: Nymex, VM Group

Heating oil, Nymex, \$/gallon



Source: Nymex, VM Group

Kerosene, Singapore, \$/barrel



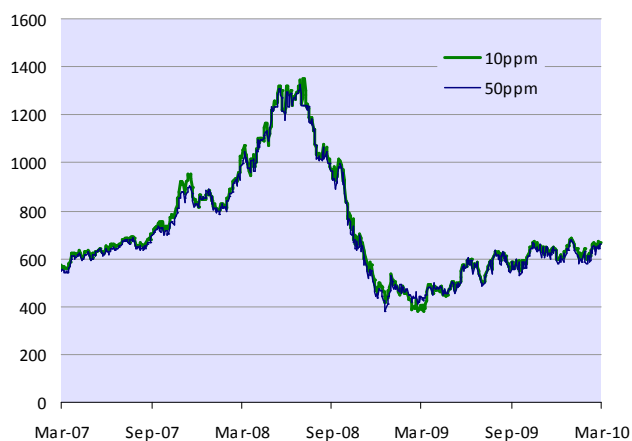
Source: Reuters, VM Group

Low sulphur diesel, US locations, cents/gallon



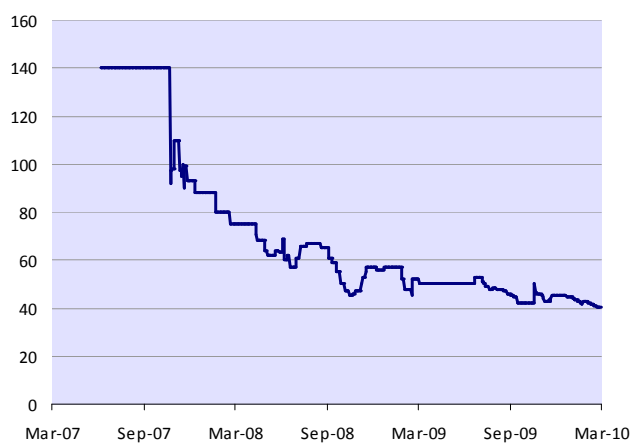
Source: Reuters Ecowin, VM Group

Low-sulphur diesel, Europe, \$/tonne



Source: Reuters Ecowin, VM Group

Uranium, Nymex, \$/pound



Source: Nymex, VM Group

Coal, Nymex, \$/ton



Source: Nymex, VM Group

Oil Supply and Demand

World oil supply and demand, million barrels per day: estimates and current forecasts (2010)

	Q1 08	Q2 08	Q3 08	Q4 08	Q1 09	Q2 09	Q3 09	Q4 09	Q1 10	Q2 10	Q3 10	Q4 10
Demand												
OPEC	86.61	85.17	84.91	84.99	84.01	83.11	84.60	85.49	84.64	83.76	85.57	86.50
EIA	86.86	86.29	85.25	84.62	83.42	83.64	84.26	85.07	85.18	84.77	85.22	86.02
IEA	87.44	86.28	85.83	85.33	84.48	84.11	85.31	85.72	86.13	85.63	86.70	86.85
Supply												
OPEC	85.16	85.43	84.76	84.71	83.75	83.68	84.37	85.22				
EIA	85.76	85.62	85.26	84.91	83.42	83.54	84.41	85.11	85.39	85.51	85.42	85.86
IEA	87.00	86.68	86.18	85.89	84.43	84.05	85.03	85.97	86.44	86.03	85.52	86.46
Net (deficit) surplus												
OPEC	(1.45)	0.26	(0.15)	(0.28)	(0.26)	0.56	(0.23)	(0.28)				
EIA	(1.10)	(0.67)	0.01	0.29	0.00	(0.10)	0.15	0.04	0.21	0.74	0.20	(0.16)
IEA	(0.44)	0.40	0.35	0.56	(0.05)	(0.06)	(0.28)	0.26	0.31	0.40	(1.18)	(0.39)

Source: Energy Information Administration, International Energy Agency and OPEC

IEA

World oil supply and demand, million barrels per day

	Q1 08	Q2 08	Q3 08	Q4 08	Q1 09	Q2 09	Q3 09	Q4 09	Q1 10	Q2 10	Q3 10	Q4 10
Demand												
OECD DEMAND												
North America	24.8	24.4	23.6	23.9	23.5	22.9	23.3	23.4	23.4	23.1	23.6	23.6
Europe	15.3	15.1	15.5	15.4	14.9	14.2	14.5	14.7	14.8	14.3	14.6	14.8
Pacific	8.9	7.9	7.5	8.0	8.1	7.3	7.3	7.9	8.0	7.1	7.1	7.6
Total OECD	49.0	47.3	46.6	47.3	46.6	44.4	45.1	45.9	46.2	44.5	45.3	46.1
NON-OECD DEMAND												
FSU	4.2	4.1	4.3	4.1	3.9	3.8	4.0	4.0	4.1	4.0	4.2	4.2
Europe	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
China	7.9	8.0	8.1	7.6	7.7	8.6	8.8	8.8	8.4	8.9	8.8	8.7
Other Asia	9.9	9.9	9.4	9.5	9.9	10.1	9.7	9.9	10.3	10.3	10.0	10.1
Latin America	5.7	6.0	6.0	5.9	5.8	6.0	6.1	6.1	6.0	6.2	6.3	6.2
Middle East	6.7	7.1	7.6	7.0	6.7	7.3	7.8	7.1	7.1	7.6	8.0	7.5
Africa	3.2	3.2	3.1	3.2	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.3
Total Non-OECD	38.4	38.9	39.2	38.0	37.9	39.7	40.3	39.8	39.9	41.1	41.4	40.8
Total Demand	87.4	86.3	85.8	85.3	84.5	84.1	85.3	85.7	86.1	85.6	86.7	86.8
Supply												
OECD SUPPLY												
North America	14.2	14.0	13.6	13.8	14.2	13.9	14.2	14.3	14.2	13.9	13.5	13.9
Europe	4.9	4.8	4.5	4.8	4.9	4.5	4.2	4.4	4.3	3.9	3.8	4.0
Pacific	0.6	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.8	0.8	0.8
Total OECD	19.7	19.5	18.8	19.3	19.7	19.0	19.0	19.4	19.2	18.6	18.1	18.7
NON-OECD SUPPLY												
FSU	12.9	12.9	12.7	12.7	13.0	13.2	13.3	13.5	13.7	13.9	13.7	13.9
Europe	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
China	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.9	4.0	4.0	4.0	4.1
Other Asia	3.7	3.6	3.6	3.7	3.6	3.6	3.6	3.6	3.7	3.7	3.8	3.8
Latin America	4.1	4.1	4.2	4.2	4.3	4.3	4.3	4.4	4.5	4.5	4.6	4.7
Middle East	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6
Africa	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4
Total Non-OECD	28.8	28.8	28.7	28.7	29.0	29.2	29.4	29.7	30.1	30.3	30.2	30.6
Processing gains	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2
Other biofuels	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.5	0.5
Total Non-OPEC	51.1	50.9	50.1	50.7	51.3	50.9	51.2	51.8	52.0	51.6	51.1	52.0
Non-OPEC Historical Composition	50.1	49.9	49.1	49.7	51.3	50.9	51.2	51.8	52.0	51.6	51.1	52.0
OPEC												
Crude	31.5	31.4	31.5	30.5	28.5	28.5	28.8	29.0				
NGLs	4.4	4.4	4.5	4.6	4.6	4.7	5.0	5.2	5.4	5.6	5.9	6.0
Total OPEC	35.9	35.8	36.1	35.2	33.1	33.2	33.9	34.1	n/a	n/a	n/a	n/a
Total Supply	87.0	86.7	86.2	85.9	84.4	84.0	85.0	86.0	n/a	n/a	n/a	n/a
Balance	0.44	(0.40)	(0.35)	(0.56)	0.05	0.06	0.28	(0.26)	n/a	n/a	n/a	n/a

Source: International Energy Agency; data after Q4 2009 = forecasts

EIA

World oil supply and demand, million barrels per day

	Q1 08	Q2 08	Q3 08	Q4 08	Q1 09	Q2 09	Q3 09	Q4 09	Q1 10	Q2 10	Q3 10	Q4 10
Demand												
OECD	48.96	47.34	46.61	47.29	46.40	44.36	44.9	46.05	46.38	44.61	45.1	46.15
US (50 States)	20.04	19.76	18.9	19.3	18.84	18.47	18.62	18.78	18.91	18.77	18.77	18.97
US Territories	0.27	0.27	0.27	0.27	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Canada	2.31	2.19	2.25	2.26	2.20	2.08	2.17	2.24	2.24	2.09	2.2	2.24
Europe	15.32	15.06	15.52	15.41	14.91	14.23	14.47	14.91	14.81	14.38	14.83	14.98
Japan	5.45	4.63	4.34	4.71	4.72	4.03	4.1	4.41	4.6	3.8	3.83	4.19
Other OECD	5.57	5.42	5.33	5.33	5.47	5.28	5.27	5.45	5.55	5.31	5.22	5.5
Non-OECD	37.89	38.95	38.64	37.33	37.02	39.28	39.36	39.03	38.79	40.16	40.13	39.87
Former Soviet Union	4.23	4.22	4.47	4.48	4.09	4.19	4.24	4.33	4.11	4.13	4.28	4.24
Europe	0.79	0.8	0.8	0.8	0.77	0.77	0.82	0.82	0.79	0.77	0.83	0.83
China	7.94	8.07	7.78	7.54	7.62	8.44	8.33	8.48	8.42	8.78	8.66	8.77
Other Asia	9.64	9.74	9.06	8.83	9.28	9.51	9.15	9.31	9.63	9.74	9.29	9.51
Other Non-OECD	15.29	16.12	16.53	15.69	15.25	16.38	16.82	16.09	15.84	16.74	17.08	16.53
Total World Consumption	86.86	86.29	85.25	84.62	83.42	83.64	84.26	85.07	85.18	84.77	85.22	86.02
Supply												
OECD	21.3	21.05	20.37	20.94	21.15	20.72	20.75	21.18	20.89	20.74	20.42	20.58
US (50 States)	8.67	8.75	8.18	8.46	8.76	8.99	9.11	9.24	9.2	9.33	9.3	9.37
Canada	3.38	3.22	3.4	3.4	3.38	3.2	3.32	3.34	3.4	3.32	3.37	3.4
Mexico	3.29	3.19	3.15	3.12	3.06	2.99	2.96	2.98	2.78	2.8	2.69	2.64
North Sea	4.44	4.32	4.06	4.38	4.4	4.02	3.81	4.06	3.97	3.76	3.51	3.67
Other OECD	1.52	1.57	1.58	1.58	1.54	1.52	1.55	1.55	1.54	1.53	1.53	1.5
Non-OECD	64.46	64.57	64.89	63.97	62.27	62.82	63.66	63.94	64.5	64.77	65.01	65.28
OPEC	35.72	35.84	36.18	35.16	33.38	33.61	34.28	34.29	34.48	34.61	35.16	35.27
Crude Oil Portion	31.31	31.42	31.68	30.67	28.88	28.86	29.34	29.31	29.35	29.29	29.67	29.56
Other Liquids	4.41	4.42	4.5	4.49	4.51	4.75	4.94	4.98	5.13	5.32	5.48	5.72
Former Soviet Union	12.59	12.6	12.42	12.46	12.6	12.87	12.98	13.11	13.15	13.24	13.1	13.09
China	3.94	4.00	3.97	3.98	3.92	3.98	4.01	4.02	4.03	4.07	4.05	4.07
Other Non-OECD	12.21	12.13	12.31	12.36	12.36	12.35	12.39	12.51	12.84	12.84	12.71	12.84
Total World Production	85.76	85.62	85.26	84.91	83.42	83.54	84.41	85.11	85.39	85.51	85.42	85.86
Non-OPEC Production	50.04	49.78	49.08	49.75	50.03	49.93	50.13	50.82	50.91	50.9	50.27	50.58
Inventory Net Withdrawals												
US (50 States)	0.12	(0.34)	(0.20)	(0.35)	(0.65)	(0.48)	(0.06)	0.83	0.17	(0.48)	(0.07)	0.37
Other OECD	(0.24)	0.01	(0.28)	(0.16)	(0.07)	0.20	(0.20)	0.10	(0.16)	(0.10)	(0.05)	(0.09)
Other Stock Draws and Balance	1.23	1.01	0.47	0.22	0.72	0.37	0.11	(0.96)	(0.23)	(0.16)	(0.08)	(0.13)
Total Stock Draw	1.10	0.67	(0.01)	(0.29)	0.00	0.09	(0.15)	(0.04)	(0.22)	(0.74)	(0.20)	0.16
End-of-period Inventories												
US Commercial Inventory	954	980	1,002	1,035	1082	1115	1119	1042	1026	1070	1077	1042
OECD Commercial Inventory	2,569	2,601	2,651	2,694	2740	2751	2773	2686	2685	2738	2749	2723

Source: Energy Information Administration; data after Q4 2009 = forecasts

OPEC

World oil supply and demand, million barrels per day

	Q1 08	Q2 08	Q3 08	Q4 08	Q1 09	Q2 09	Q3 09	Q4 09	Q1 10	Q2 10	Q3 10	Q4 10
Demand												
North America	24.77	24.42	23.58	23.93	23.52	22.92	23.26	23.44	23.60	23.11	23.53	23.74
Western Europe	15.34	15.07	15.55	15.44	14.91	14.23	14.62	14.84	14.56	14.05	14.46	14.72
Pacific	8.91	7.86	7.54	7.97	8.14	7.3	7.27	8.01	8.01	7.11	7.1	7.89
OECD	49.02	47.35	46.67	47.34	46.57	44.45	45.15	46.29	46.17	44.27	45.09	46.35
Other Asia	9.49	9.55	9.18	9.23	9.41	9.73	9.50	9.71	9.63	9.87	9.77	9.9
Latin America	5.60	5.84	5.97	5.80	5.61	5.82	6.02	5.98	5.67	5.89	6.11	6.07
Middle East	6.77	6.87	7.09	6.86	6.96	7.07	7.30	7.03	7.18	7.3	7.53	7.26
Africa	3.22	3.18	3.11	3.21	3.26	3.23	3.16	3.27	3.31	3.29	3.22	3.31
Dev. countries	25.00	25.45	25.35	25.11	25.24	25.85	25.98	25.99	25.79	26.35	26.63	26.54
FSU	4.17	3.79	4.22	4.24	3.82	3.7	4.14	4.18	3.85	3.72	4.17	4.22
Other Europe	0.83	0.76	0.79	0.78	0.77	0.73	0.77	0.76	0.75	0.73	0.77	0.78
China	7.97	8.17	8.10	7.65	7.61	8.38	8.56	8.27	8.08	8.69	8.91	8.61
Other Regions	12.98	12.72	13.12	12.67	12.20	12.81	13.47	13.21	12.68	13.14	13.85	13.61
World Demand	87.08	85.51	85.13	85.12	84.01	83.11	84.60	85.49	84.64	83.76	85.57	86.50
Supply												
North America	14.25	14.38	13.75	14.08	14.19	14.01	14.19	14.28	14.32	14.25	14.16	14.29
Western Europe	5.21	5.04	4.77	4.97	5.06	4.66	4.45	4.75	4.61	4.41	4.26	4.45
OECD Pacific	0.58	0.63	0.64	0.71	0.64	0.61	0.65	0.64	0.64	0.64	0.67	0.68
Total OECD	20.01	19.72	19.09	19.59	19.89	19.28	19.29	19.67	19.57	19.30	19.09	19.42
Other Asia	2.76	2.67	2.70	2.84	3.71	3.69	3.70	3.77	3.74	3.75	3.71	3.7
Latin America	4.00	4.06	4.12	4.17	4.36	4.38	4.39	4.51	4.53	4.57	4.65	4.75
Middle East	1.64	1.65	1.64	1.63	1.67	1.68	1.69	1.67	1.67	1.68	1.67	1.66
Africa	2.77	2.78	2.81	2.81	2.73	2.73	2.72	2.67	2.69	2.68	2.71	2.7
Dev. countries	12.20	12.19	12.25	12.27	12.47	12.48	12.50	12.62	12.62	12.66	12.73	12.81
FSU	12.62	12.68	12.42	12.70	12.64	12.9	13.00	13.16	13.18	13.18	13.15	13.28
Other Europe	0.14	0.14	0.14	0.14	0.14	0.13	0.14	0.14	0.14	0.14	0.14	0.14
China	3.81	3.88	3.85	3.91	3.80	3.86	3.88	3.87	3.89	3.87	3.93	3.92
Other Regions	16.57	16.68	16.43	16.46	16.58	16.89	17.02	17.17	17.21	17.19	17.22	17.34
Non-OPEC Supply	48.78	48.6	47.77	48.32	48.94	48.65	48.81	49.46	49.40	49.15	49.04	49.57
Processing gains	1.95	1.95	1.95	1.95	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98
OPEC NGLs + Non-conventional oils	4.22	4.33	4.35	4.35	4.59	4.64	4.88	4.96	5.04	5.2	5.32	5.26
Non-OPEC & OPEC NGLs Supply	53.95	54.19	53.14	54.26	55.29	55.18	55.51	56.14	56.42	56.33	56.34	56.81
OPEC Production												
Total OPEC	31.21	31.24	31.62	30.45	28.46	28.50	28.86	29.08	n/a	n/a	n/a	n/a
OPEC excl. Iraq	28.73	28.85	29.30	28.12	26.13	26.09	26.35	26.61	n/a	n/a	n/a	n/a
World Oil Demand	86.61	85.17	84.91	84.99	84.01	83.11	84.60	85.49	84.64	83.76	85.57	86.50
Supply excluding												
OPEC Crude	53.95	54.19	53.14	54.26	55.29	55.18	55.51	56.14	56.42	56.33	56.34	56.81
Difference	32.66	30.98	31.77	30.73	28.72	27.93	29.09	29.35	28.22	27.43	29.23	29.69
OPEC production	31.21	31.24	31.62	30.45	28.46	28.50	28.86	29.08	n/a	n/a	n/a	n/a
Balance	(1.45)	0.26	(0.15)	(0.28)	(0.26)	0.56	(0.23)	(0.28)	n/a	n/a	n/a	n/a

Source: OPEC Monthly Oil Market Report; data after Q4 2009 = forecasts; totals might not add due to rounding.

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VM Group work excels in macro-economic analysis, the generation of supply and demand scenarios, costs analysis, derivative research and price forecasting. Confidentiality, experience and independence are key elements in this advisory capacity. We deliver excellence to those in need of external expertise, as well as those who wish to supplement their own in-house resources. Our extensive international contacts mean we are able to span the globe.

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