

Supply issues resurface

Oil prices have rebounded of late, reflecting renewed supply concerns and anticipated stimulatory economic measures in the US and elsewhere. Supply concerns, however, are probably overblown as they were earlier in 2012, while more US quantitative easing is unlikely to have more than a transitory impact on prices and to have little effect on activity. We expect the market to remain in surplus over the rest of 2012, which should dampen the current price rally.

Supply/demand position: Substantial surplus in 2012

The oil market swung decidedly into surplus between late 2011 and the first half of 2012. This reflected both buoyant supply and subdued demand with the former stemming largely from a surge in OPEC output and the latter a lacklustre world economy. We believe that given the subdued demand picture, the seasonal upturn in the second half of 2012 will be comfortably accommodated in the absence of major outages. It should be noted that non-OPEC controlled output growth should strengthen between the first and second halves and that rising Iraqi output will at least partly offset the expected drop in Iran. For 2012 a supply surplus of significantly over 1mmb/d is on the cards, reflecting demand growth of 0.7mmb/d and a gain in output approaching 2mmb/d.

Crude oil prices: Prices rebound in July

Light crude prices fell by about 30% between the first quarter 2012 highs and the late June lows as supply concerns dissipated and supply/demand fundamentals deteriorated. Since late June light crude prices have rebounded by about 18%. The Brent-WTI spread narrowed sharply from the first quarter high of \$21/barrel to a recent low in June of \$10/barrel but has subsequently widened to \$18/barrel as geopolitical concerns have again come to the fore. We look for Brent to average about \$100 and \$96/barrel in the third and fourth quarters respectively. The implied average for 2012 of \$95.7/barrel constitutes a slight upgrade from the previous \$104.4/barrel to reflect recent supply concerns.

US natural gas prices: Constrained upside

The key Henry Hub benchmark quote fell to around a 10-year low of \$1.84/mmBtu on April 20. Subsequently it has rebounded to c \$2.95/mmBtu driven by a surge in power generation use. We see scope for a firming trend over the rest of 2012 and in 2013 driven by a sharp cutback in drilling activity and a return to more normal weather conditions. However, falling coal prices and high inventories may limit the upside potential. We have consequently downgraded our Henry Hub forecast for 2012 from \$3.03 to \$2.83/mmBtu.

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WTI vs Brent



AIM Oil & Gas Index



FTSE 350 Oil & Gas Index



Price trends

	WTI \$/barrel	Brent \$/barrel	Henry Hub \$/mmBtu
2009	62.0	62.0	3.94
2010	79.5	79.7	4.37
2011	94.9	110.0	4.00
2012e	91.5	105.7	2.83
2013e	86.5	95.3	3.25

Note: Prices are yearly averages
 Source: Bloomberg, Edison Investment Research

Crude oil market dynamics

Price overview

Market backdrop: Prices have rebounded of late

Recent months in retrospect. After the surge in benchmark light crude oil prices in the first quarter of 2012, market sentiment changed dramatically in the second quarter, sending prices sharply lower. Since the last week in June, however, prices have rebounded but remain well below the highs of the first quarter of 2012. The plunge in benchmark international prices of around 30% between the first-quarter highs and the late June lows was driven initially by an easing of fears over the imminence of military action in the Middle East related to Iran's nuclear programme. As the second quarter progressed, the key factors depressing oil prices were a combination of growing signs of a slowdown in the world economy and indications that the supply position was not as tight as suggested by consensus at the beginning of the first quarter. It should also be noted that the second-quarter slide in oil prices was part of a wider sell-off in commodities. The broadly-based S&P GSCI Commodity Index, for example, fell by 22% between the first quarter 2012 high and the late June low.

Exhibit 1: S&P GSCI Commodity Index



Source: Bloomberg, S&P

Demand backdrop weakens. In terms of the slowdown in the world economy, the key developments have been the intensification of the apparently intractable European sovereign debt crisis and the rapidly weakening economic trends in China, India and Brazil. As far as Europe is concerned, the evidence pointing to a significant recession in 2012 has clearly accumulated in recent months. Furthermore, there are no particular grounds for optimism concerning a significant recovery in 2013. In this regard it worth noting that Europe as a whole accounts for about 17% of world oil demand, which is not far behind the 21% of the US and well ahead of China's 11% weighting. The economic slowdown in China is arguably more pronounced than many observers expected at the beginning of 2012 reflecting a weakening construction sector, auto industry activity coming off the boil and a narrowing trade surplus. Slowing Chinese economic growth from a petroleum industry perspective is particularly influential given that China is expected to account for almost 40% of the gain in global oil demand anticipated by the likes of the IEA and OPEC in 2012.

Both OPEC and non-OPEC production increasing. From a supply perspective, the interesting fact so far about 2012 is that global production has been able to more than keep pace with demand, despite some significant outages in various parts of the non-OPEC world and declining Iranian exports. The chief outages have been in Sudan/South Sudan, Syria, Yemen and the North Sea and reflect a combination of mechanical failures, labour disputes, EU sanctions and specifically in the case of Sudan/South Sudan an ongoing inter-governmental conflict over border and pipeline

issues. According to the IEA, the impact of the outages was 1.2mmb/d in the first quarter and almost 1.3mmb/d in the second quarter. North Sea output has been running at historically depressed levels of late due to a combination of unplanned technical outages and the oilfield service industry labour dispute at the end of June. Production for the quarter might well have not been much more than 3mmb/d, roughly 10% down on a year earlier.

Despite the outage-induced losses, non-OPEC output has actually shown year-on-year growth of 0.7mmb/d or so in the second and third quarters based on IEA data. This has been driven principally by the US and also by Canada in the second quarter. The key driver in the former has been burgeoning shale-related production and in the latter a recovery in Athabasca oil sands output following planned and unplanned maintenance in the first quarter of 2012.

Importantly, buoyant non-OPEC output this year has been combined with a strong upward trend in OPEC crude oil production for a number of months. The latter started to gather momentum in the third quarter of 2011 and, according to the OPEC June Oil Market Report, was running at almost 33mmb/d by early in the second quarter of 2012. This was up 3.8mmb/d on the low point in the second quarter of 2011. The IEA shows a smaller increase of 2.6mmb/d but either way there was a substantial gain in OPEC output over a relatively short period leading to a return to at least 2008 levels. Further support to supplies has also been provided by OPEC natural gas liquids, which are not subject to quota. The incremental contribution from this source in 2012 has been about 0.5mmb/d.

The key drivers behind the increase in OPEC crude output over the past year or so have been Saudi Arabia, Iraq, Libya and the UAE. Interestingly, Saudi output in recent months at about 10mmb/d has been running at the highest level in over 20 years based on Bloomberg data. At 10mmb/d Saudi Arabia retains spare capacity of almost 2mmb/d. Iraq's output has been boosted to a post Saddam record of almost 3mmb/d with field development and new export facilities offshore Basra being the key factors. Libyan production in 2012 has of course been buoyed by the earlier cessation of hostilities in the country. At 1.4mmb/d production here is only about 0.1mmb/d below the levels prevailing before the outbreak of hostilities in Libya in February 2011. Overall, the recovery in Libya's production has been stronger than was generally expected in late 2011.

OECD inventories look very comfortable The upshot of the supply and demand trends so far in 2012 has been that OECD inventories have returned to the seasonally adjusted five-year average after having been somewhat lower at the beginning of the year. On a forward-demand cover basis, OECD inventories in April were, in fact, running 1.9 days above the five-year average of 59.4 days. Current overall OECD inventories should, in our view, be considered as very comfortable.

Why have prices rebounded in July?

In the 20 working days after the end-June lows, international crude prices soared around 20%. This appears to have reflected three factors:

- anticipation of stimulatory economic measures in Europe, China and the US;
- a strike in the Norwegian sector of the North Sea by Baker Hughes workers; and
- renewed Iran supply concerns and tension in the Middle East.

Limited stimulatory measures were indeed implemented by a number of countries in late June and early July. Action included interest rate cuts in the EU and China and an extension of Operation Twist in the US. Furthermore, the EU crisis summit on 28/29 June arguably made progress, albeit limited, in providing finance to troubled economies in the eurozone. The Federal Reserve's decision

not to implement a third round of quantitative easing, not yet at least, has disappointed the market slightly. The market, however, lives in hope.

The strike in the Norwegian oilfield service sector started towards the end of June and resulted in the loss of 250,000b/d for some days. However, the strike ended in early July after government intervention.

Iranian concerns have flared again along with a resurgence in Middle East tension after a period of quiescence. The concerns have been triggered in part, at least, by the deadline for imposing EU sanctions on Iran's oil and financial sectors being reached on 1 July and uncertainty as to precisely the scale of the resulting loss of Iranian exports. So far, the impact of sanctions on Iranian production has been modest at around 0.2mmb/d from end 2011 levels of about 3.5mmb/d. The decline in exports, however, has probably already been considerably greater with the difference held in storage. The evidence relating to countries cutting back or eliminating Iranian imports is suggesting that the drop in exports could ultimately drop by more than the current consensus estimate of 1mmb/d. The key problem for Iran is proving to be the EU/US financial sanctions relating to banking and tanker insurance rather than the EU embargo on Iranian imports per se. Few, if any, countries have been willing to risk being isolated from the US financial system while London's pre-eminence as the world's shipping insurance centre has provided a very effective way of enforcing a broader embargo on Iran.

Recent trends in Brent and WTI: The July rebound has been stronger for Brent than WTI

In the first quarter of 2012 the trend in Brent, the key international light oil benchmark, was generally stronger than WTI, the inland US benchmark with Brent supported largely by the concerns over Iran. The picture altered radically in April when WTI started to outperform Brent. Between early and late April WTI outperformed Brent.

Exhibit 2: Brent crude oil price trend



Source: Bloomberg

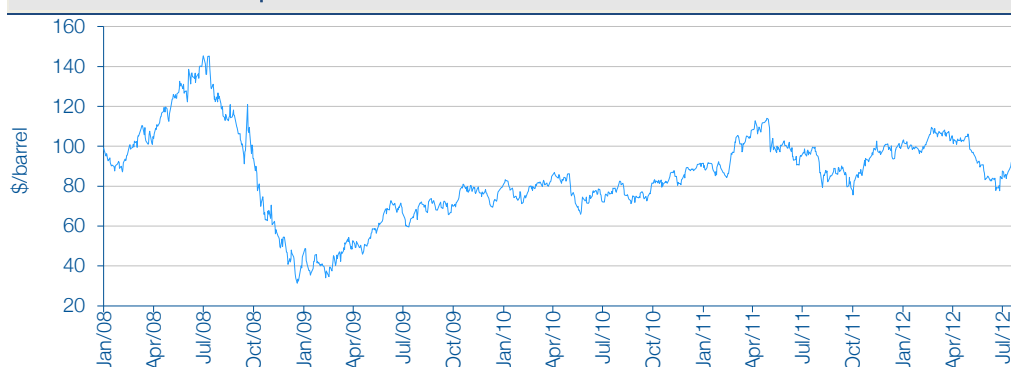
At the end of March 2012 Brent was trading at \$123.8/barrel, not far off the 10-month high of \$126.7/barrel struck towards the end of February. In the first three weeks of April, Brent trended sharply down hitting a low for the month of \$117.4/barrel on 19 April. This largely reflected a combination of an easing of concerns over Iran, a periodic eruption of the European sovereign debt crisis, disquiet concerning the economic slowdown in China and a change of view by the IEA on crude oil inventories. Brent recovered some lost ground in the fourth week of April but still ended the month at \$119.7/barrel, around \$5-6/barrel off the high ground of February to March. The average for April was \$120.5/barrel against \$124.9/barrel in March.

Between end April and the third week in June Brent trended sharply down consistently with only very minor interruptions of short duration. By end May Brent was down to \$102.1/barrel and in

early June fell below \$100/barrel, the key Saudi Arabia target price for light crude. The recent low for Brent came on 21 June when it hit \$88.7/barrel, around a 20-month low and down 30% on the February high. Significantly the slump in Brent between February and June was the most pronounced since that in the second half of 2008. Brent firmed in the last week of June and on the last trading day of the month was \$97/barrel. The average for June was \$95.6/barrel against \$110.5/barrel in May. For the second quarter Brent averaged \$108.7/barrel, well below the \$118.7/barrel of the first quarter of 2012.

Brent continued to firm in early July and on 3 July hit a 22-day high of \$100.1/barrel. This was up 13% on the June low. Over the following eight trading days Brent trended broadly flat with renewed concerns over the European sovereign debt crisis and recessionary conditions in Europe plus some disappointing US payroll data dampening market sentiment. Between 16 and 19 July the upward trend was resumed driven by intensifying Middle East tension. Brent was trading at \$107.9/barrel on 19 July, up 22% on the June low and 11% above a year previously.

Exhibit 3: WTI crude oil price trend



Source: Bloomberg

WTI came under moderate downward pressure in early April, reflecting the onset of bearish international influences and industry statistics. The grade reached a low for the month on 10 April of \$101.0/barrel, down \$2/barrel on end March and \$8.5/barrel on the first quarter high of \$109.5/barrel struck on 24 February. Over the balance of April WTI firmed, driven by bullish sentiment concerning the direction of the US economy and an announcement from Enbridge/Enterprise on 16 April relating to the bringing forward of the reversal of the Seaway pipeline from Houston to Cushing by two weeks or so to 17 May. The reversal is expected to help significantly increase low-cost take away capacity from the Cushing, Oklahoma tank farm (NYMEX delivery point) and thereby facilitate a narrowing of the WTI discount to more highly priced waterborne import grades. For April WTI averaged \$103.3/barrel, down 3% on the previous month.

WTI continued to firm on 1 May with a closing price of \$106.2/barrel. Between early May and the fourth week of June, however, WTI pretty much moved down in tandem with Brent. At the low point on 28 June WTI was trading at \$77.7/barrel, the lowest level in around nine months and 29% below the February high. On the last trading day of June WTI rebounded sharply to \$85.0/barrel reflecting a positive interpretation of the outcome of the EU crisis summit on 28/29 June. For June WTI averaged \$82.4/barrel, down 13% on the prior month. In early July WTI tended broadly flat at about \$85/barrel. From 13 July WTI regained upward momentum propelled by bullish international influences and a positive interpretation of the EIA's weekly statistical update on the 18 July. The upward tendency in mid-July was, however, less pronounced than for Brent. WTI was trading on 19 July at \$89.9/barrel, up 16% on the June low but down 8% on a year ago.

Light crude spreads

WTI-Brent: WTI back to \$18/barrel of late

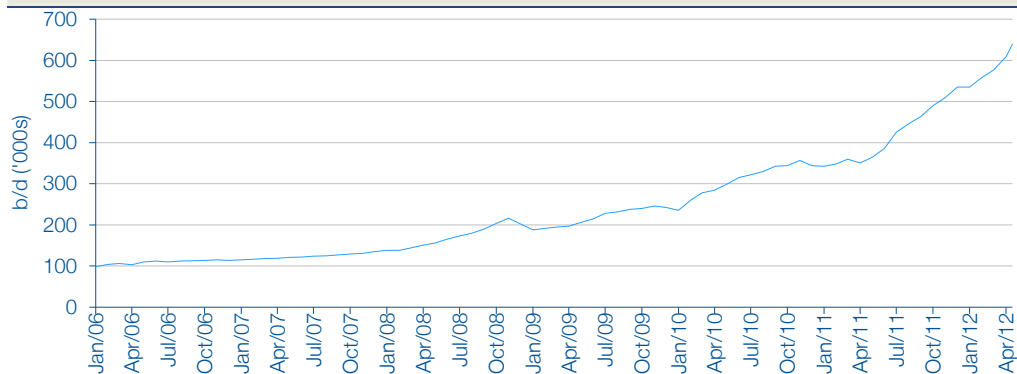
The WTI Cushing discount to Brent remained at historically elevated levels of about \$20/barrel in early April but as the month progressed it narrowed noticeably. At the end of April the discount was \$14.8/barrel and for the month averaged \$17.2/barrel, against \$18.4/barrel in March. The pronounced narrowing of the WTI discount reflected the evolving market dynamics for WTI and Brent. A combination of lessening tension between Iran and the West over Iran's nuclear programme was bearish for Brent while the previously mentioned Seaway reversal decision timing was bullish for WTI. May was uneventful for the WTI-Brent discount. The average for the month was \$16/barrel.

During June the WTI-Brent spread narrowed significantly and by 20 June was down to \$10.3/barrel, the narrowest since January 2012. For June as a whole the discount averaged \$13.2/barrel. The June narrowing tended to be driven by mounting economic concerns relating to Europe. By late June, however, the WTI discount was widening again and by end month was at \$12.0/barrel. The discount continued to widen through mid-July and by 19 July was at \$18/barrel. A resumption of the widening trend of late reflects the resurfacing of Iranian concerns and the backwash of the Norwegian offshore service industry strike. Both factors have a greater bearing on Brent than WTI.

After trading at an abnormally high \$9/barrel in early April the discount of WTI Midland (west Texas) to WTI Cushing has narrowed to more normal levels in recent weeks. In early July the WTI Midland discount was around \$1.55/barrel and on 19 July was \$0.70/barrel. The dramatic widening in the discount earlier in 2012 reflected a surge in supplies in the Permian basin and transportation bottlenecks in the region. The subsequent narrowing would appear to stem from the easing of these bottlenecks. Significantly rail connections have been improved between West Texas and Houston, and in April Sunoco Logistics Partners began operations on a new pipeline over the same area. Several other pipeline projects are under consideration linking West Texas and the Gulf Coast refining complex.

US production developments: Continuing strong upward trend in North Dakota and Texas

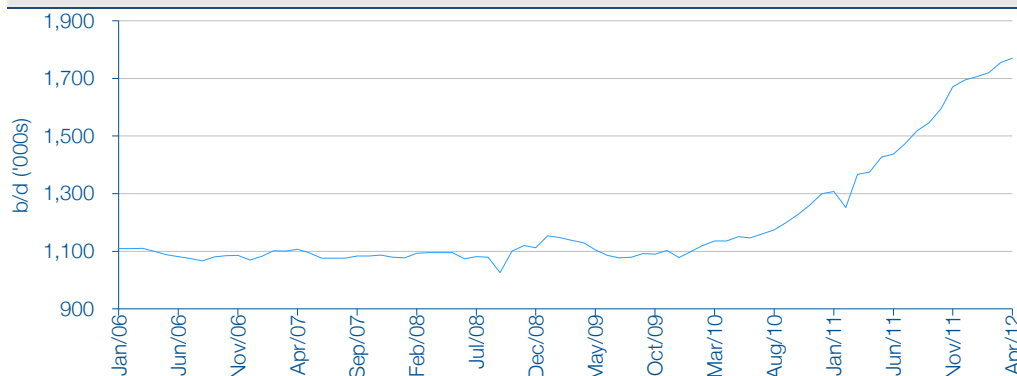
North Dakota. North Dakota's truly impressive upward trend in oil production continues. In May, the most recent month for which data is available, production reached a record 639,277b/d according to the ND Department of Mineral Resources. Production in May was up 5% on the prior month and 75.7% on a year previously. Interestingly North Dakota has become the second largest oil producing state in the US in 2012 having displaced Alaska (April 552b/d) and California (April 523b/d). Furthermore, the surge in North Dakota's output has occurred within past four or five years and has stemmed from intensive drilling activity and advances in completion technology in the Bakken/Three Forks shale formation.

Exhibit 4: North Dakota crude oil production

Source: EIA

Further major gains in North Dakota output are on the cards both near and long term. Significantly, drilling activity remains robust with 281 spuds in May against 147 a year previously. Cumulatively, spuds in 2012 are 66% higher than in 2011, although the comparison is probably flattered by this year's more clement weather conditions. Certainly North Dakota's year-end production forecast of 650,000 b/d is increasingly looking on the conservative side. James Volker, the chairman and CEO of Whiting Petroleum, has suggested that North Dakota production will reach 1mmb/d by 2015. Previously the Department of Mineral Resources had been looking for 750,000b/d by the same date but now appears to be anticipating at least 850,000 b/d. Reflecting the success of completion techniques, recoverable reserves in the Bakken now appear far greater than the 4.3bn barrels suggested by the USGS in 2008. Continental Resource's estimate of 20bn barrels (24bn boe including natural gas) increasingly appears nearer the mark.

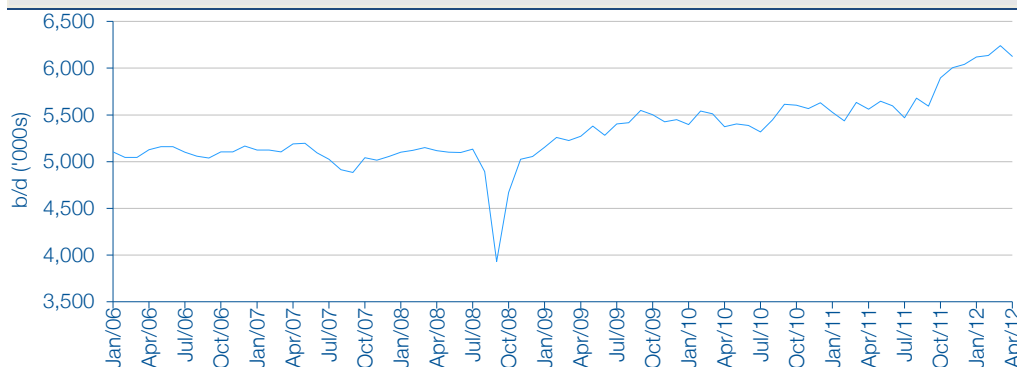
Texas. Production in Texas, the largest oil producer in the union, has continued to trend significantly higher in 2012 driven by the rapid development of the Eagle Ford shale zone and the tight oil deposits in the Permian Basin. In April production came in at 1.77mmb/d, up 0.9% on the prior month and 29% on a year earlier. Cumulatively production through the first four months of 2012 was 31% higher than in 2011. Currently production from the Permian Basin is about 1.1mmb/d while the Eagle Ford is generating around 500,000b/d of crude and natural gas liquids. Significantly, production in Texas is now running at the highest level in 20 years. We believe that production in the state is likely to exceed 2mmb/d in 2013 driven in particular by surging production in the Eagle Ford play. This would be the first time that 2mmb/d has been exceeded in Texas since mid-1988.

Exhibit 5: Texas crude oil production

Source: EIA

USA. US crude oil output overall has been buoyant in 2012 driven by the strong trends in Texas and North Dakota together with some other lower 48 states, such as Colorado, New Mexico and Oklahoma. In April US production was running at 6.13mmb/d, down 2% on the previous month but up 10% on a year earlier. Cumulatively US production has risen 11% in 2012 and is at the highest level in 14 years. Growth in US production in 2012 has continued be constrained by the weak trends in Alaska, California and the Gulf of Mexico.

Exhibit 6: US crude production



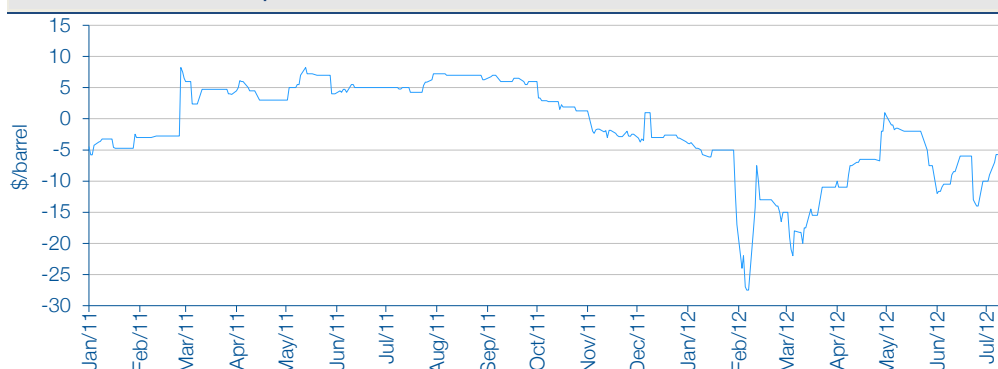
Source: EIA

Bakken and Syncrude-WTI spreads: The earlier discounts evaporate in July

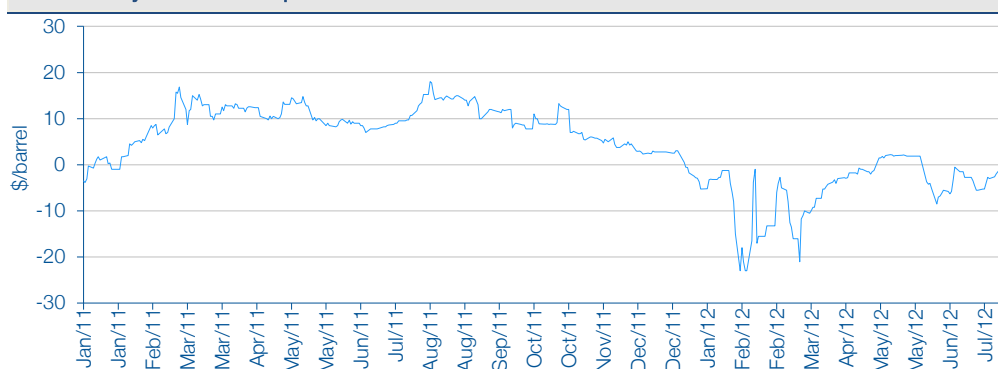
Bakken (Clearbrook Minnesota hub) and Canadian Syncrude (Edmonton, Alberta hub) light crude grades reflected unprecedented discounts to WTI in February 2012. At their maximum extent the discounts were around \$25/barrel and for the month averaged \$16/barrel and \$13/barrel respectively. By contrast, in 2011 Bakken had traded at a premium averaging \$3/barrel whereas Syncrude had sold at a \$9/barrel premium to WTI. The sharp swing from premium to discount was symptomatic of buoyant production in the Williston Basin of North Dakota and the Athabasca oil sands of Alberta and acute transportation bottlenecks.

Between March and May, the Bakken discount narrowed markedly to about \$2/barrel while Syncrude actually swung to a premium to WTI of \$1/barrel. We believe the narrowing of the Bakken discount was probably a function of stepped-up efforts to ship oil by rail to higher priced hubs, such as St James, Louisiana. Certainly, there was more than enough margin for this back in February and March. In the case of Syncrude, we believe the swing from discount to premium between February and May reflected declining production related to planned and unplanned maintenance at the two largest oil sands operators, Syncrude and Suncor Energy. Both reported that unplanned maintenance was complete by May. Oil sands production at Syncrude and Suncor in the first six months of 2012 was down 11% and up 8.6% respectively on a year previously.

In late June the Bakken discount to WTI widened to \$14/barrel while Syncrude swung back to a discount of about \$5/barrel. At the low point in the month, prices of around \$64/barrel for Bakken and \$72/barrel for Syncrude remained the lowest for premium grade light oil available globally, excluding countries with state-controlled markets. In July the Bakken and Syncrude spreads changed dramatically. By 18 July the Bakken discount had narrowed to \$0.5/barrel and the Syncrude discount had been transformed into a premium of \$3.0/barrel. At the time of writing the reasons for the recent dramatic changes in the Bakken and Syncrude spreads were not clear. In the absence of major unplanned outages, we would expect to see discounts for Bakken and Syncrude of around \$5/barrel in the coming months.

Exhibit 7: Bakken-WTI spread

Source: Bloomberg

Exhibit 8: Syncrude-WTI spread

Source: Bloomberg

Shale cost/price equation: Margins remain healthy at \$80/barrel

In the light of the slump in WTI in recent months and the persistence of a significant Bakken discount, the viability of shale oil projects at \$80/barrel or lower prices has been questioned by some petroleum industry observers. We believe, however, that based on current economics a liquids-rich shale play, such as the Bakken, remains a highly attractive investment. Using data from key Bakken players such as Continental, Oasis Petroleum and Whiting Petroleum we would estimate currently cash costs at about \$42/barrel and fully accounted costs at perhaps \$59/barrel. The former reflects lifting costs of \$10/barrel, G&A of \$3/barrel, transportation to the railhead or pipeline of \$2/barrel, severance tax of \$9/barrel (North Dakota tax of 11.5% using realisations of \$80/barrel) and landowner royalties of \$14/barrel (18% based on realisations of \$80/barrel). For capital costs we have assumed \$17/barrel with \$16 and \$1/barrel relating to drilling/completion and land costs respectively. Drilling/completion costs reflect a typical Bakken cost per well of around \$8m and an estimated ultimate recovery rate (EUR) of 500,000 barrels.

On the basis of the above and assuming realisations of \$80/barrel, the cash and fully accounted margins are a very healthy \$38/barrel and \$21/barrel respectively. We suspect, therefore, that for development interest to subside in a well established shale play such as the Bakken that realisations would have to drop to less than \$70/barrel on a sustained basis. In less well established plays than the Bakken, however, where uncertainties surrounding development and economics are greater the price threshold might be higher.

Exhibit 9: WTI 2008-12 quarterly prices (\$/barrel)

	Q1	Q2	Q3	Q4	Total
2008	97.9	123.8	118.2	59.1	99.9
2009	43.2	59.7	68.1	76.0	62.0
2010	78.8	77.9	76.1	85.2	79.5
2011	93.9	102.3	89.5	94.0	94.9
2012	103.0	93.3	86.0e	83.5e	91.5e

Source: Bloomberg, Edison Investment Research

Exhibit 10: Brent 2008-12 quarterly prices (\$/barrel)

	Q1	Q2	Q3	Q4	Total
2008	96.5	122.2	115.9	56.2	97.7
2009	45.1	59.4	68.4	75.0	62.0
2010	76.8	78.6	76.4	86.9	79.7
2011	104.9	116.8	109.1	109.3	110.0
2012	118.7	108.7	100.0e	95.5e	105.7e

Source: Bloomberg, Edison Investment Research

Outlook for the WTI-Brent spread: The WTI discount should ultimately fall to \$4-5/barrel

In the absence of major facility outages, strikes, weather-related issues or geopolitical concerns we would expect to see the WTI-Brent discount narrow moderately over the balance of 2012. The key factor here is the recent upgrade to the take away capacity at Cushing through the start-up of the Seaway pipeline. This together with improved rail links to the Gulf Coast refineries should constrain somewhat the build-up of inventories at Cushing. At this stage we only expect a moderate narrowing of the WTI-Brent spread given the modest capacity of the Enbridge Seaway pipeline of 150,000b/d. Bearing this in mind, we would expect to see the WTI discount average around \$14/barrel in the third quarter of 2012 and perhaps \$12/barrel in the fourth quarter. If there is a resurgence in political tension between the West and Iran over Iran's nuclear programme in the coming months, the spread is likely to widen dramatically given the fears that would be engendered concerning a disruption to Middle Eastern supplies. Clearly, Middle Eastern developments are of greater significance for an international grade such as Brent than for the inland US grade, WTI.

Potentially the impact of the Seaway pipeline on the WTI-Brent spread will increase in 2013 as capacity is expanded to 400,000 b/d. Significantly, the expansion has recently been brought forward from the first quarter of 2013 to the fourth quarter of 2012. Abstracting from a major geopolitical crisis or perhaps further North Sea outages we believe the WTI discount is likely to drop to less than \$10/barrel in 2013. Ultimately the discount should decline to perhaps \$4 to \$5/barrel, which is slightly above the proposed pipeline tariff for uncommitted shipments.

LLS-WTI and LLS-Brent: LLS should swing from a structural premium to discount to Brent

Light Louisiana Sweet (LLS) is a Gulf of Mexico-sourced light crude comparable in specification to WTI and Brent. It competes with waterborne imports at Gulf Coast refineries and has traditionally traded at a dollar or so premium to WTI and \$2 to \$3/barrel to Brent. Given Gulf sourcing, LLS naturally tracks Brent rather than the inland grade WTI. As a consequence, a hefty LLS premium to WTI has opened up on occasion over the past 18 months to two years. In recent months the LSS premium to WTI peaked in March at \$20.9/barrel on average. Subsequently it has trended down and in early July was running at about \$17/barrel. The significant LLS premium continues to put

Gulf Coast refineries at a significant cost disadvantage to their Mid-Continent counterparts able to source WTI.

Unusually, LLS was trading at a discount of \$0.5/barrel to Brent in January, which probably reflected tight supplies of the latter combined at the time with growing tension over the Iran nuclear issue. As these concerns eased, LLS swung back to a more normal premium to Brent between February and April of broadly \$1-2/barrel. In May there was a return to an LLS discount. The average for the month was \$2.3/barrel but this narrowed to \$0.5/barrel in June. Through the first three weeks of July the LLS was trading at approximate parity with Brent. The evolution of the LLS-Brent spread of late reflects the renewed tightness in Brent supplies in recent weeks plus in all likelihood increasing supplies from the Mid-Continent.

Medium term, we expect LLS to move from a structural premium to a discount to Brent of \$2/barrel or more. This we believe will be a function of the anticipated influx of low-cost light crude from the Mid-Continent, Texas and Canada to the Gulf Coast following the installation of new high capacity pipeline connections. By mid-decade we believe it is very likely that imported light crudes will be entirely displaced along the Gulf Coast. Significantly the increasing availability of low cost light crude will give Gulf Coast refiners a structural competitive advantage in an Atlantic Basin context.

Exhibit 11: Recent trends in WTI, LLS and Brent



Source: Bloomberg

Other key international light crude benchmarks: Urals recently swung to a premium to Brent

Brent-Urals Mediterranean. Urals is a Russian-sourced medium-sour export blend that is shipped either from Black Sea or Baltic ports. Reflecting its inferior quality in terms of gravity and sulphur, Urals has typically sold at a discount of \$1-3/barrel to Brent. Urals is nevertheless well suited to producing middle distillates such as diesel and can be easily shipped to the refining centres of the Mediterranean.

In the first two months of 2012 Urals sold at discounts to Brent of \$0.7-1.3/barrel or towards the lower end of the historical range. After widening in March and April to \$2.4 and \$2.6/barrel respectively, probably due to tightening Brent supplies and falling refinery utilisation, the discount narrowed over the next two months to \$1.9/barrel and in early July unusually swung on occasion to a premium of \$0.3/barrel or so. The explanation appears to be a scrambling for feedstock by Mediterranean refineries in the wake of the EU embargo on Iranian imports coming into effect. Urals, it appears, is a close match in terms of specification to Iranian crudes and also has logistical advantages, reflecting the short supply lines, compared with crude grades shipped from the Middle East.

As Brent strengthened around mid-July Urals again reverted to a more customary discount of \$1.5/barrel or so.

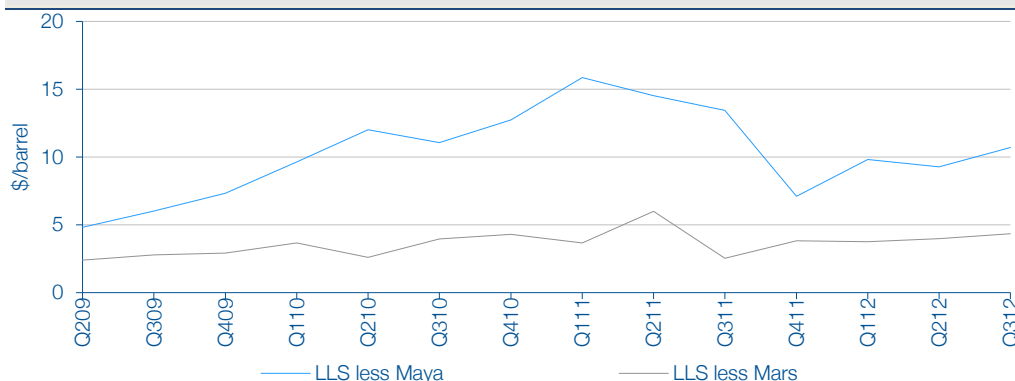
Brent-Dubai. Dubai is a Gulf-sourced light but relatively sour crude popular with Far Eastern refineries. So far in 2012 Dubai has traded at a discount of \$0.5-4/barrel to the higher grade Brent. The average for the period to early July is \$2.2/barrel, which is in line with longer term averages. In early July the Dubai discount was around \$1.8/barrel but widened significantly to over \$4/barrel in the third week of the month. Demand from Far Eastern refineries for sour grades has apparently remained buoyant in recent months.

Brent-Bonny. The key eastern Atlantic Brent-Bonny (Nigerian ultra-low sulphur grade) spread has been within the normal range of \$1 to \$2.5/barrel for most of 2012 year-to-date. However, there has however been a tendency for the Bonny premium to Brent to narrow over the past three months from around \$2/barrel to less than \$1/barrel in early July. This is possibly indicative firstly of an improving supply situation for high quality light crudes in the eastern Atlantic and Mediterranean following the return of Libyan supplies pretty well to normal in recent months and secondly an abundance of light crude on the US Gulf Coast. Note that a major market for Bonny Light has traditionally been the US.

Tapis-Dubai. The spread between Tapis, a high-quality low sulphur Malaysian-sourced crude and Dubai is one of the key sweet-sour crude price relationships. The spread was running at about \$11.5/barrel in favour of Tapis through the first five months of 2012. In June the Tapis premium dipped to \$9.7/barrel but has subsequently widened to about \$11/barrel. This leaves it down significantly from peak levels of about \$15/barrel in 2011. The earlier narrowing Tapis spread appears to have reflected a combination of the improving availability of light crudes and the relative buoyancy of demand for sour grades in Asia.

US heavy crude spreads: Discounts widen in July

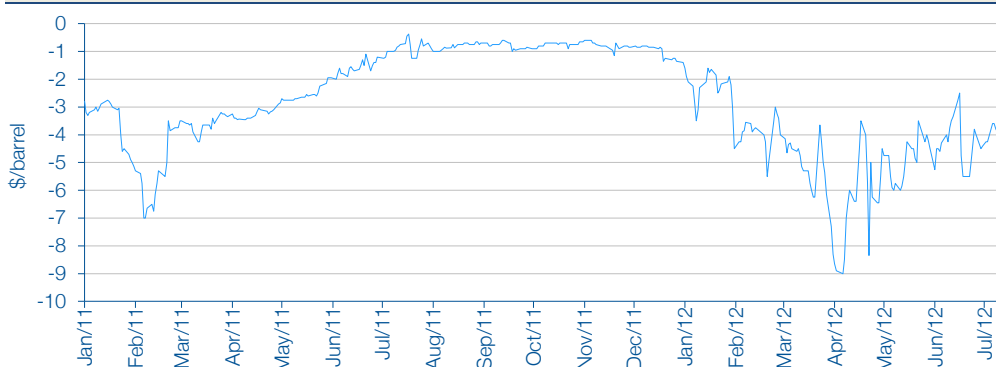
US heavy crude discounts widened substantially through the first four months of 2012 but have subsequently narrowed. Taking Mars, a medium-sour grade sourced from the Gulf of Mexico, the average discount to LLS widened from \$2.3/barrel in January to \$6.7/barrel in April. For Maya, a Mexican heavy-sour grade, the discount on the same basis climbed from \$4.7/barrel to \$14.1/barrel and in March was actually running at \$15.1/barrel. The widening of the heavy discounts in the early months of 2012 reflected the surge in waterborne light crude prices at the time. In May and June heavy discounts narrowed sharply as earlier upward pressure on light crude prices rapidly unwound. During these two months the discounts to LLS averaged approximately \$3/barrel for Mars and \$7/barrel for Maya. In July heavy discounts have again widened with those for Mars and Maya rising to about \$4.4/barrel and \$10.7/barrel respectively. Currently heavy discounts are under longer-term averages of \$6/barrel for Mars and \$13/barrel for Maya.

Exhibit 12: US medium and heavy discounts

Source: Bloomberg

WTS-WTI spread: Sharp narrowing of the WTS discount in recent months

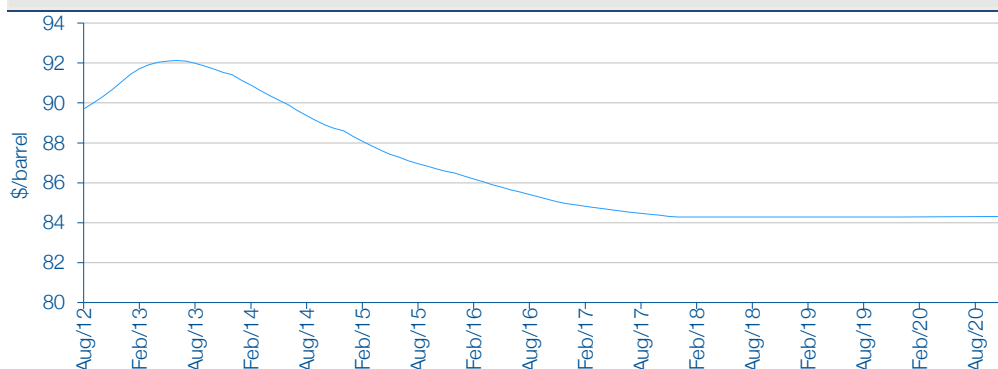
WTS (West Texas Sour) is an inland medium gravity sour grade with a specification similar to Mars and a delivery point of Midland, West Texas. The WTS discount to Cushing, Oklahoma WTI also widened in the early part of 2012 and in April averaged \$6.6/barrel, well up from the \$2.2/barrel of January. On a spot basis the discount actually reached \$9/barrel in early April, historically a very high level. Driving the widening spread in the early part of the year was the build-up of supplies in the western Permian basin much as for Midland WTI. Since April the WTS discount has narrowed significantly and in early July was around \$3.8/barrel. This is slightly above the longer-term average of \$3.5/barrel.

Exhibit 13: WTS-WTI spread

Source: Bloomberg

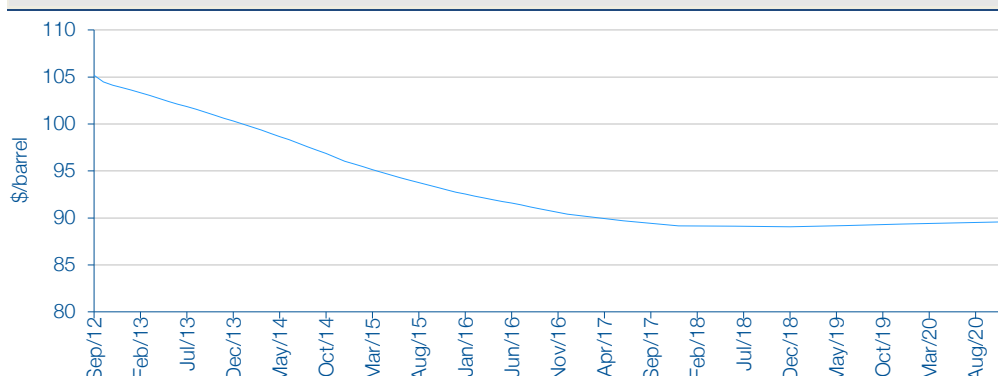
Forward curves: Brent backwardation, WTI mild contango

The forward curves for Brent and WTI remain essentially the same in terms of profile as three months ago. WTI is in mild contango (near-term prices lower than for forward dates) for all months through mid-2013. From a spot price of \$89.9/barrel on 18 July the WTI forward curve rises to \$91.0/barrel by year end 2012 and \$92.1/barrel by June 2013. The curve then goes into backwardation (near-term prices greater than for forward dates) over the next 3.5 years reaching \$85/dollar by end 2016. Over the following four years the WTI curve is essentially flat at about \$84.3/barrel.

Exhibit 14: WTI forward curve

Source: Bloomberg

The Brent forward curve remains in significant backwardation through late 2017. From a spot price of \$106.1/barrel on 18 July the curve dips to \$103.9/barrel by end 2012. Over the following five years the forward curve drops \$14.9/barrel to \$89/barrel. Subsequently the trend is broadly flat through end 2020 leaving a Brent premium to WTI of around \$5/barrel. Brent's backwardation continues to reflect tight near-term supplies. The recent strike by oilfield service workers in the Norwegian sector of the North Sea and the consequent loss of output has presumably supported Brent backwardation.

Exhibit 15: Brent forward curve

Source: Bloomberg

Supply/demand balance: Substantial surplus in 2012

2012. The global petroleum supply/demand balance appears to have loosened significantly between late 2011 and the first half of 2012. There, in fact, seems little doubt that the market was comfortably in surplus during the latter period. OPEC, indeed, has estimated that the surplus was 2.1mmb/d and 2.4mmb/d in the first and second quarters of 2012 respectively. The key question now concerns the outlook for the supply/demand balance over the rest of 2012 and particularly the prospects for an enduring surplus bearing in mind the seasonal boost to demand in the second half and a likely sizeable drop in Iranian production as sanctions bite.

We expect the market will probably remain in surplus or at least balance in the coming months abstracting from major and sustained facility and/or logistical outages. The key factor leading to this conclusion is that demand will probably be seasonally weak, reflecting recessionary or quasi recessionary conditions across a large part of the OECD world and rapidly slowing economic growth in the larger developing countries, including most notably China. Superimposed on this

backdrop is the depressing impact on demand of historically high real product prices and negative structural influences. The key example of the latter is the rising fuel economy of the vehicle fleet.

Reflecting the decidedly lacklustre market backdrop, the EIA (the forecasting and statistical arm of the US Department of Energy) has recently cut its global demand growth forecast for 2012 by 0.1mm to 0.7mmb/d, equivalent to a gain of 0.8%. This is based on the assumption of world economic growth of 2.9%. The IEA and OPEC are looking for somewhat higher oil demand growth of 0.8mmb/d and 0.9mmb/d respectively. We believe that the risks are to the downside to all these forecasts given the deeply entrenched economic malaise in the world economy. Demand growth of nearer 0.5mmb/d for 2012 would not be totally surprising in our view. This might reflect a gain of 1mmb/d in the developing world and a drop of 0.5% in the OECD. Interestingly, in its June Oil Market Report, the IEA gave a sensitivity analysis of oil demand to GDP growth. Using an economic growth assumption of 2.3% rather than the 3.5% used for its current forecasts the IEA estimates an increase in oil demand of 0.34mmb/d in 2012. It should be noted that the major forecasting agencies such as the IEA base their oil demand growth forecasts to a greater or lesser extent on IMF GDP predictions. The IMF recently reduced its earlier 3.6% growth forecast to 3.5%. Relative to this forecast the EIA and OPEC (3.3%) are on the conservative side but the IEA appears a shade optimistic.

The key area of uncertainty surrounding the supply/demand balance in 2012 remains supply. Iran continues to be the principal issue, although the seemingly never-ending sequence of outages in the North Sea is also a concern. Current and anticipated trends, however, suggest that there should be more than sufficient oil to cover demand growth of 0.7mm to 0.8mmb/d. EIA forecasts, for example, point to production globally increasing by about 1.9mmb/d in 2012 reflecting gains of 0.8mmb/d for both OPEC and non-OPEC production and 0.3mmb/d for OPEC NGLs. It should be noted that the OPEC gain is significantly less than the year-on-year rise in the first half of 1.4mmb/d and allows for falling Iranian output in the second half and some trimming back of Saudi production. These negatives are, however, in any case likely to be partially offset by rising Iraqi production in the second half. As far as non-OPEC production is concerned there is, of course, a possibility that the anticipated gain will be trimmed back by major outages. However, the strong upward trend in North American production on which the non-OPEC forecast is predicated is well established. Furthermore, supply interruptions are always a wild card.

Some observers will no doubt argue that significantly higher OPEC production in 2012 reduces spare capacity and leaves the supply infrastructure vulnerable to a wild card event. This indeed is the case but at an estimated 2.4mmb/d on average in 2012 according to the EIA, it remains adequate for the normal realm of eventualities. Clearly, it would not be sufficient if there was a major disruption to shipments through the Straits of Hormuz. Interestingly the world has become somewhat less dependent on this transit route after the recent completion of a new pipeline from Abu Dhabi to Fujairah on the Gulf of Oman and the resurrection of an east-west pipeline in Saudi Arabia.

2013. Significantly, the EIA has recently sharply reduced its oil demand growth forecast for 2013 from 1.1mmb/d to 0.7mmb/d. This reflects a downgrading of global economic growth expectations from 3.5% to 2.9%. We believe the EIA's downgrade of demand growth makes eminent sense given the world economy's deep-seated malaise. It certainly would not be difficult to arrive at a significantly lower forecast for demand growth than predicted by the EIA. Recently the IEA and OPEC have announced somewhat higher 2013 growth forecasts than the EIA at 1mmb/d and 0.8mmb/d respectively. These reflect more bullish global GDP growth assumptions.

Non-OPEC supply growth should be buoyant in 2013. The EIA is looking for a gain of 1.1mmb/d with the principal drivers being capacity additions in the US (shale development), Canada (Athabasca oil sands), Brazil (pre-salt) and the Kazakhstan (start of operations at the giant Kashagan field) sector of the Caspian Sea. Partly offsetting growth in these areas is expected to be declines in the North Sea and Mexico, much as in recent years. Overall, the EIA expects North America to account for approaching half the production gain in 2013. OPEC NGLs look like showing a more modest gain in 2013 than in recent years at 0.1mmb/d to 0.2mmb/d. The implied increase in non-OPEC controlled output would nevertheless still be a robust 1.2mmb/d or so, which would comfortably exceed anticipated demand growth even on a reasonably bullish assumption for the world economy.

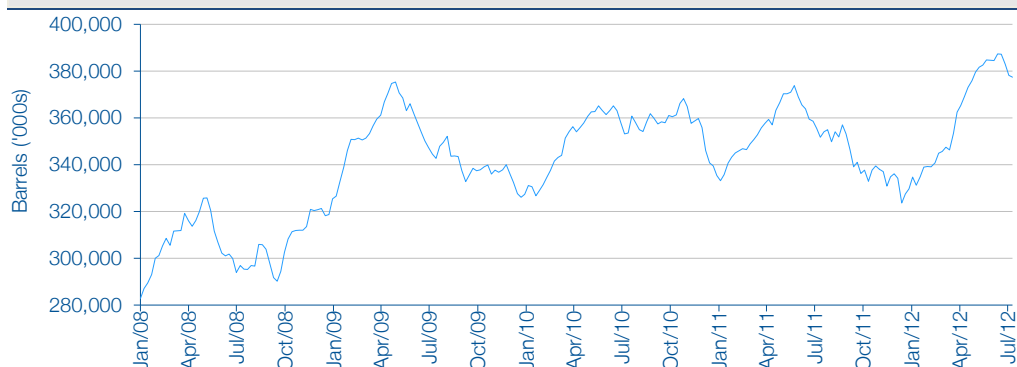
Arguably the key issue for 2013, however, is what happens to OPEC output. The EIA is looking for a decline of 0.9mmb/d reflecting in part a further 0.2mmb/d sanctions related cutback in Iran and in part an inventory correction exercise. Assuming a reduction of this magnitude the implied supply/demand balance would be a deficit of 0.7mmb/d. It is still worth noting that considerable uncertainty surrounds OPEC production in 2013 and that OECD inventories going into 2013 are likely to be at high levels by the standards of the past 10 years. This applies particularly to days' cover; at 57.3 days, this is towards the high end of the range over the past decade.

US inventories

Crude oil: Edging down but still seasonally very high

US commercial crude oil inventories surged through the first 5.5 months of 2012 reaching roughly 22 year highs in the process. Based on EIA data, inventories reached a recent high on 15 June of 387.3mm barrels. This was up 57.6mm barrels on the end of 2011 and 23.5mm barrels on a year previously. An upward trend in crude oil inventories in the first half of the year is in part a seasonal phenomenon reflecting low refinery utilisation but this year it has been especially strong. Since 15 June, inventories have edged down and on 13 July were 377.4mm barrels. However, this still leaves them well above the upper end of the range for the time of year. On a days' supply basis inventories are also at an elevated level historically. For the week ending 13 July inventories were equivalent to 24.1 days after having been as high as 26.0 days at the beginning of May. The former compares with 22.9 days a year previously. Including the strategic petroleum reserve, crude inventories on 13 July were 1073.3mm barrels, equivalent to about 69 days' supply.

Exhibit 16: US crude oil inventory



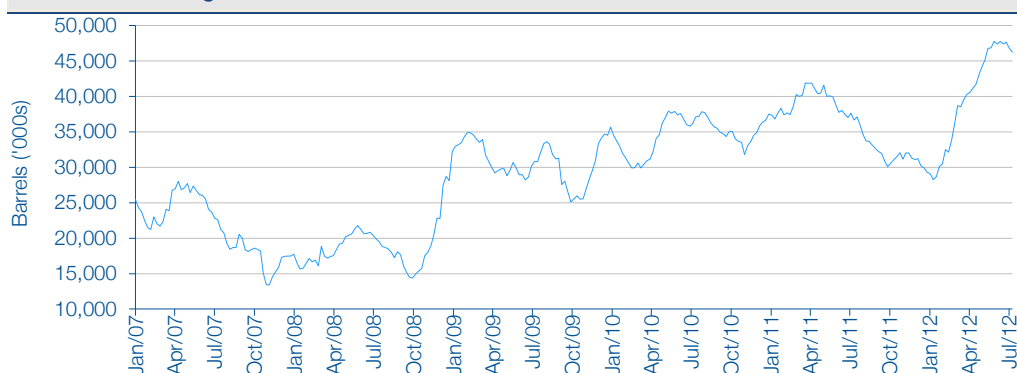
Source: EIA

Cushing: Still close to record levels

Crude oil inventories at Cushing, Oklahoma, the world's largest tank farm, also trended strongly upwards in the early months of 2012 and reached record levels. The high came on 1 June when inventories hit 47.8mm barrels against 29.3mm barrels at the end of 2011 and 38.9mm barrels a year earlier. By the second week in July Cushing's inventories had slipped back to 46.3mm barrels, still a very high level historically and 9.6mm barrel above a year ago. The shell capacity of the Cushing tank farm has been boosted by a substantial 13.9mm barrels over the past 15 months and currently stands at 74.6mm barrels according to the EIA. Working capacity is somewhat less at 61.9mm barrels leaving the utilisation rate at 76%.

The sharp gain in Cushing's inventories in 2012 has largely reflected buoyant US Mid-Continent production and increasing supplies from Canada stemming from upgraded pipeline connections.

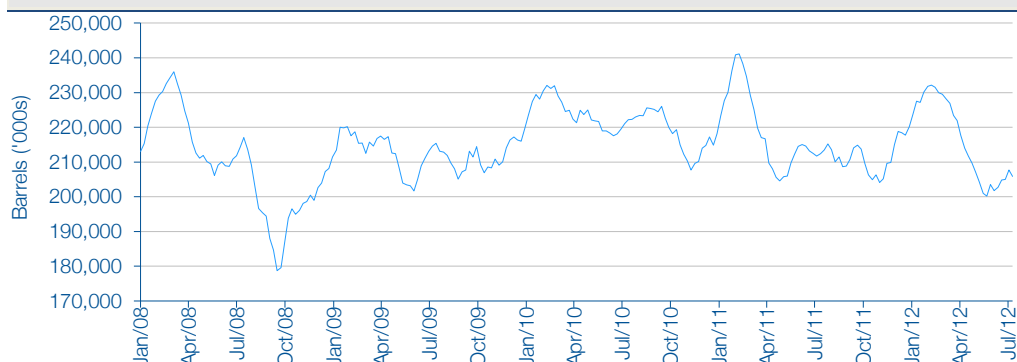
Exhibit 17: Cushing crude oil inventories



Source: EIA

Gasoline: Seasonally low in absolute terms but days' supply normal

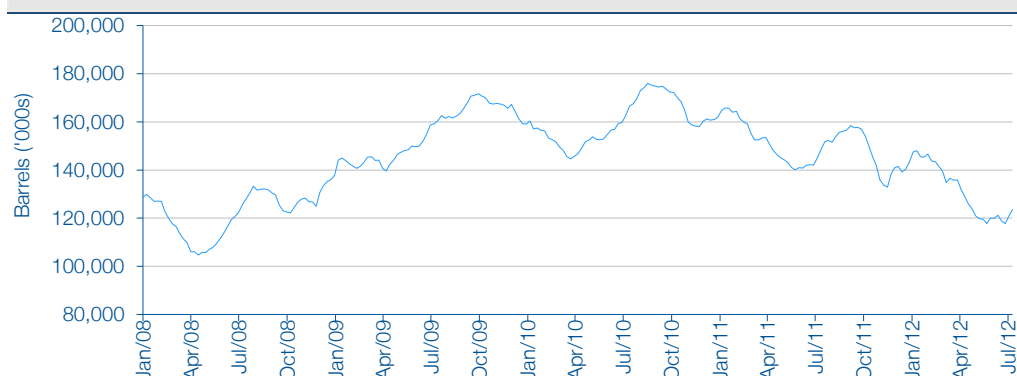
Contrasting with crude oil, the trend in US gasoline inventories has been seasonally weak in 2012. However, we believe that this needs to be viewed through the prism of a decidedly soft gasoline market backdrop and the desire of refiners to keep inventories on a tight rein. The recent low for gasoline inventories was 200.2mm barrels on May 25. This was down 12.1mm barrels from a year earlier and was at the low end of the range for the time of year based on the five-year average. Since late May gasoline inventories have edged higher and in the week ending 13 July stood at 205.9mm barrels, which was a modest 6.6mm barrels below a year previously and around the bottom end of the historical range for the time of year. From a days' supply perspective gasoline inventories appear normal long term. At the beginning of July they stood at 23.3 days against 23.2 days a year earlier. In practice then gasoline inventories are reasonably comfortable.

Exhibit 18: US gasoline inventory

Source: EIA

Distillates: Seasonally low but days' supply within the historical range

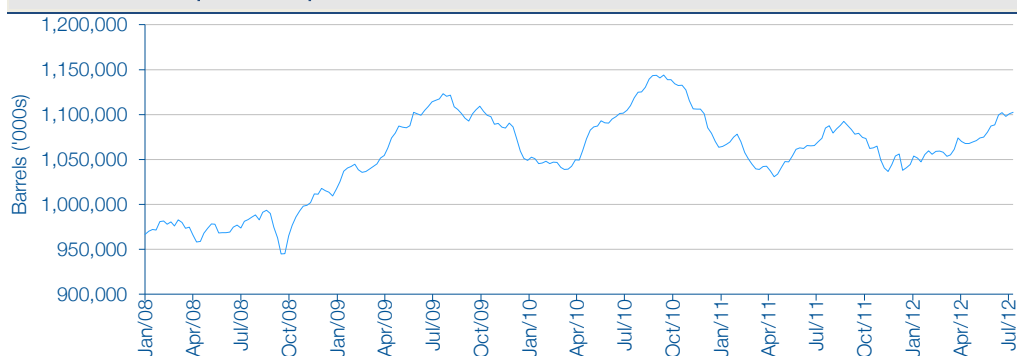
US distillate inventories have been trending down seasonally since early 2011 and are now slightly below the lower end of the five-year range for the time of year. Like those for gasoline however, distillate inventories have edged up since late May. For the week ending 13 July they came in at 123.5mm barrels, down 25mm barrels from a year earlier but up 5.7mm barrels on the recent low at the end of May. On a days' supply basis distillate inventories were equivalent to 34.6 days, against 42.4 days a year ago. Although the current days' supply position is well below the average level of the past two or three years, it is not out of line with the longer-term picture. Over the past 20 years distillate days' supply has ranged from a low of 22.5 days to a high of 50.

Exhibit 19: US distillate inventories

Source: EIA

All petroleum product inventories: Close to a 20-year high

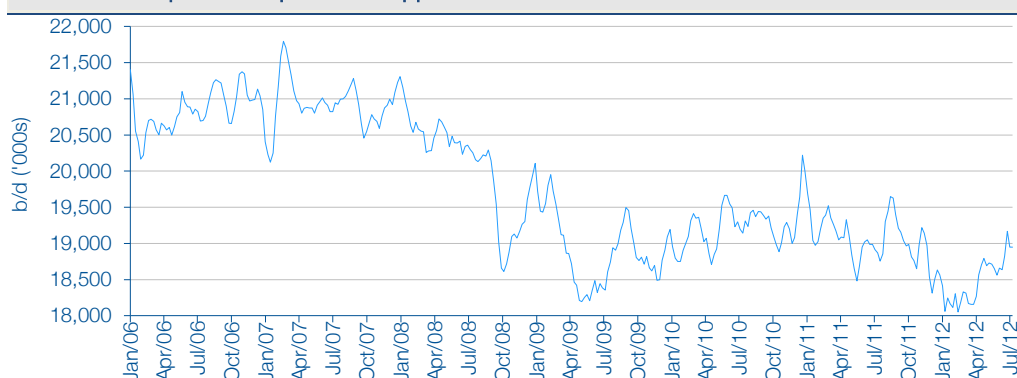
We believe the soundest basis for assessing the adequacy of inventories is on the all-encompassing definition. US commercial crude oil and petroleum product inventories have trended significantly upward since late 2011 and currently are close to a 20-year high. Based on EIA data for 13 July inventories on this definition were 1102mm barrels, up 29mm barrels a year previously. In recent years the high for commercial crude oil and petroleum product inventories was 1144 mm barrels in September 2010.

Exhibit 20: US all petroleum product inventories

Source: EIA

US petroleum product demand: Firmer trend of late

US petroleum product demand remains lacklustre but a few flickers of life have appeared of late. Based on EIA data for products supplied (a proxy for demand) demand overall has begun to show year-on-year gains which contrasts with the pronounced declines of earlier in 2012. In the four weeks to 13 July demand averaged 18.95mmb/d, up 0.4% from a year previously. However, reflecting the weak trend earlier in 2012 demand in the year-to-date has fallen 2.8% from 2011. In terms of the product mix, the year-on-year movements in the four weeks to 6 July were gasoline -3.3%, kerosene 5.3%, distillates 1.9%, residual fuel oil -32.2%, propane/propylene 54.2% and miscellaneous 0.8%. Cumulatively gasoline consumption in 2012 has dropped by 4.9% from 2011 to 8.57mmb/d. The next two largest product groups, distillates and kerosene, have shown smaller declines of 2.6% and 0.3% respectively while residual fuel oil is off by 29.6% and propane/propylene is up by 7.6%.

Exhibit 21: US petroleum products supplied

Source: EIA. Note: Data are weekly averages.

For 2012 the EIA is forecasting US petroleum product demand of 18.68mmb/d, a decline of 0.8% from 2011. This assumes normal weather patterns and constitutes a downgrade compared with earlier in the year. Gasoline is expected to show a modest decline of 0.5% to 8.70mmb/d while distillates, kerosene and residual fuel oil are expected to be down by 1.0%, 1.4% and 17% respectively. Interestingly, a forecast in line with that of the EIA's for overall demand would be down 10% or 2.12mmb/d on the 2005 all-time high of 20.80 b/d. Similarly, gasoline consumption would be 6.4% off the 2007 high of 9.29mmb/d. We believe even after the downgrades of recent months that the current EIA demand forecast for 2012 remains too high. Admittedly the year-on-year comparisons will probably become easier in the second half given the weak trend a year ago, but the US economy is likely to be considerably less than robust in the coming months and, as we

have noted, there are structural issues exerting downward pressure on use. In particular, we believe the 2012 gasoline consumption forecast is far too high. Overall a decline in US petroleum product demand in 2012 of 1.5% or 0.28mmb/d would not in our view be surprising. A wild card for the balance of 2012 is, of course, weather conditions in the fourth quarter.

For 2013 the EIA is currently forecasting modest US demand growth of 0.4% to 18.75mmb/d, a significant downgrade compared with the 18.88mmb/d of a few months ago. Gasoline demand is expected to fall by a further 0.5% but most of the other product groups are expected to show modest gains. The GDP growth assumption used by the EIA is 1.9% against 2.0% in 2012. In our view, the EIA's forecast is on the bullish side even assuming GDP growth of around 2%. Once again, we think there is a particular vulnerability on gasoline consumption bearing in mind the improving fuel economy of the vehicle fleet. Note this factor also applies to the aviation sector. Weather conditions, of course, are also a major wild card for 2013. Abstracting from a severe winter and assuming continuing sluggish economic conditions, we believe that US petroleum product demand will struggle to show any growth in 2013.

Crude oil price outlook: Lacklustre economy should keep a lid on prices

Supply concerns have recently resurfaced in crude oil markets after having been dormant for a few months. According to the bulls, supply interruptions (actual and prospective) combined with a seasonal increase in demand will lead to a pronounced tightening in the supply/demand balance in the second half of 2012. The upshot, based on this school of thought, would be a surge in international benchmark light crude prices to above the level reached earlier in the year. The most extreme version of this view assumes that the stand-off between the West and Iran over Iran's nuclear programme degenerates into a shooting war leading to crude prices surging into the stratosphere.

We believe the bullish case for crude oil is fanciful. As we have noted there is no reason to expect a seasonally pronounced tightening in the supply/demand balance in the coming months abstracting from conflict in the Middle East and a significant and sustained interruption to supplies through the Straits of Hormuz. Given the lacklustre global economic backdrop, the demand picture over the balance of 2012 is likely to remain subdued. As far as stimulatory economic policies are concerned, the scope for further action is very limited indeed bearing in mind that short-term money market rates are close to zero and in the OECD world at least there is the constraint of historically high levels of sovereign debt. Another round of quantitative easing is a possibility in the US but the authorities are well aware of the impact that this can have on commodity prices without boosting economic activity. While a sharp cutback in Saudi output is a possibility in the coming months we think this is unlikely as long as the stand-off with Iran continues. Clearly, a surge in benchmark light crude prices to perhaps \$130/barrel plus would provide short-term gratification for producers but we think the Saudis are well aware of the damage that would be done to the world economy at this juncture. Such an upsurge would also, in all likelihood, be followed by a collapse in prices as purchasing power is sucked out of the OECD economy and fuel substitution and conservation measures intensified.

Against the above background, we are leaving our price scenario for Brent and WTI broadly unchanged over the rest of 2012. In the case of Brent we are looking for an average of \$100.0/barrel during the third quarter, which is close to the level prevailing in mid July. A dip to around \$95-96/barrel is forecast for the fourth quarter reflecting what we believe will be a lacklustre macroeconomic and petroleum industry backdrop. Our new full-year forecast for Brent is \$105.7/barrel against \$104.4/barrel with the variance reflecting the recent resurfacing of supply

concerns in the marketplace. The quarterly scenario for 2012 is Q1 \$118.7, Q2 \$108.7, Q3 \$100.0 and Q4 \$95.5. We have also modestly raised the 2012 full-year forecast from \$90.9-91.9/barrel with a quarterly scenario as follows: Q1 \$103.0, Q2 \$93.3, Q3 \$86.0 and Q4 \$83.5.

For 2013 we continue to look for a subdued crude oil market backdrop, subject to the caveat of no major supply shocks. The key factor here remains the likelihood of an extended period of sluggishness in the world economy that will probably severely constrain demand growth globally. In particular, deleveraging is likely to remain a feature of the European and financial sectors while in the US, federal government deleveraging will probably intensify after the Presidential election. Indeed the 'fiscal wall' may be encountered early in 2013 resulting in sharp expenditure cutbacks and tax hikes. As noted previously, non-OPEC controlled supply increases should be sufficient to comfortably keep pace with any plausible increase in demand. We would also expect any US government to actively avoid another military conflict in the Middle East in 2013 given the potentially disastrous economic ramifications. Our forecasts call for a broadly flat trend for Brent during 2013. The forecast average of \$95.3/barrel constitutes a slight upgrade from the earlier one of \$94.5/barrel reflecting an assumed higher carryover effect from end 2012. Our WTI forecast for 2013 of \$86.5/barrel is also marginally higher than previously. It reflects a discount of \$8.8/barrel to Brent against one of \$14.2/barrel in 2012.

Exhibit 22: WTI and Brent price scenarios

\$/b	2004	2005	2006	2007	2008	2009	2010	2011	2012e	2013e
WTI	41.5	56.6	66.1	72.2	99.8	62.0	79.5	94.9	91.5	86.5
Brent	38.3	54.5	65.4	72.7	97.7	62.0	79.7	110.0	105.7	95.3

Source: Bloomberg, Edison Investment Research. Note: Prices are averages.

US natural gas market

Production and consumption: Surge in power generation use, production still buoyant

Recent trends. US natural gas production continues to trend higher despite shut-ins announced earlier this year along with scaled-back drilling activity. EIA data for April, the most recent available, show marketed production of 2.08tcf, up 5.0% on a year previously. Cumulatively in 2012 production has climbed 8.4%. The gain in natural gas production continues to reflect earlier drilling activity in the shale formations of the lower 48 states. It should be noted in this context that production also continues to be buoyed by growth from liquids-rich projects where gas is produced as a by-product. The Gulf of Mexico remains a weak spot with production in the four months to April down 17% on a year earlier. The net import balance has continued to narrow in 2012 and, at 548bcf in the four months to April, is decidedly marginal in relation to total supply. Compared with a year ago, the net import balance has fallen 26%.

Through the first four months of 2012 US natural gas production was lacklustre falling by 0.9% from a year previously to 9.28tcf. Soft consumption through the first four months in large part was driven by the exceptionally mild winter in the key natural gas consuming regions of the Northeast and Midwest. This, in particular, helped depress residential and commercial consumption through the first four months of 2012 resulting in year-on-year declines of 20% and 16% respectively. Interestingly, industrial demand for gas has been far from buoyant in 2012 and was roughly unchanged from a year earlier through April. Largely offsetting the weak spots in 2012 has been a surge in gas use in power generation. Cumulatively gas use in this application has grown by 33% in 2012 while the year-on-year increase in April alone was a hefty 38%. Rapidly increasing use of gas in power generation reflects the fuel's radical improvement in competitiveness for coal this year.

Significantly, in April natural gas and coal both accounted for about 32% of electricity generation in the US. This is the first time that the two fuels have had the same share of the power generation market.

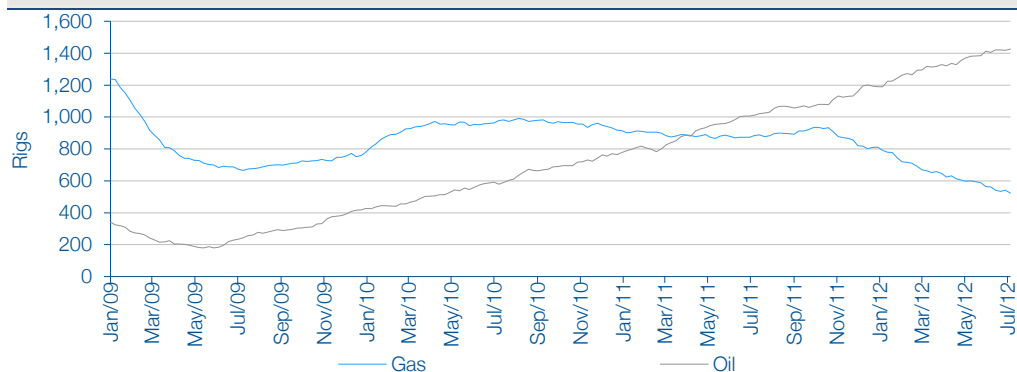
Outlook. Over the balance of 2012 we expect US marketed production to remain at a historically high level. However, year-on-year movements are expected to lose ground compared with the first four months. The loss of momentum reflects the sharp decline in drilling activity for dry gas since the third quarter of 2011. The EIA is forecasting a gain in marketed production in 2012 of 4.2% to a record 25.18tcf. For 2013 the EIA is looking for a modest increase in production of 1% 25.43tcf.

The anecdotal and statistical indicators all point to buoyant natural gas demand in the period since April. The drivers have been heavy electricity consumption and the rising natural gas burn rate in the power generation. Heavy electricity consumption reflects very high temperatures across much of the US for a number of weeks and consequent heavy air conditioner use. For 2012 as a whole the EIA is now forecasting natural gas consumption growth of 4.9% against 3.1% three months ago. A further gain of 1.7% is expected in 2013. Significantly, the forecasts are predicated on normal weather conditions and the assumption that rising gas prices will constrain further advances in the natural gas burn rate in the power generation sector. With coal selling for about \$2.40/mm Btu currently we believe that a gas price of \$3.00/mm Btu or less is required to encourage an increase in the power station gas burn. The gas premium reflects the greater handling costs of using coal along with the higher emissions.

Drilling activity and rig count: Gas rig count continues to slide, oil remains buoyant

The US rotary rig count overall continues to run close to at least a 25-year high but this is now very much an oil phenomenon. According to Baker Hughes, the oil focused rig count on 13 July 2012 of 1,427, accounted for 73% of the total against 27% for gas and miscellaneous rigs. Importantly the gas related rig count has continued to slide in recent weeks and on 13 July was a mere 522, down 41% on a year earlier and around a 13-year low. The continuing slide has been driven by the collapse in gas prices over the past year. Prices of well under \$2.5/mmBtu on occasion this year are marginal even on a cash contribution basis and never mind after taking into account drilling costs. The bulk of the rigs remaining in the field, are probably either meeting lease commitments or focused on liquids-rich shale plays such as the Marcellus and Utica formations in Appalachia. Given that finding and development costs for gas in the US are probably about \$2/mcf on average, we would not expect a sustained rise in the gas-focused rig count until prices have climbed well north of \$3/mcf.

Interestingly, the oil-related US rig count continues to surge. So far, at least, it has not been sensitive to the weakness in WTI over the past three or so months although there is some anecdotal evidence that the market is softening. Oklahoma-based Unit Drilling, for example, has recently reported that operators have recently terminated three long-term rig contracts. On 13 July 2012 the Baker Hughes oil rig count hit another post-1987 (the date when the rig count was split between oil and gas) record of 1,427, up 41% on a year earlier. The gain from the June 2009 low has been 8x.

Exhibit 23: Baker Hughes US rig count

Source: Baker Hughes, Bloomberg

Inventories: Historically very high levels

US natural gas inventories were at historically very high levels at the beginning of the injection season in early April 2012 reflecting robust production and the weather induced weak demand trend in the fourth quarter of 2011 and early 2012. Subsequently, inventories have climbed. Based on EIA data inventories on 6 July were 3,135bcf against 2,487bcf three months earlier. In recent weeks thanks to buoyant demand injection rates have been on the low side for the time of year but inventories nevertheless remain high seasonally adjusted. According to the EIA, inventories currently are 548bcf above year ago levels and 516bcf in excess of the five-year average for the time of year. The upshot is that unless there is a major outage due, for example, to hurricanes in the Gulf of Mexico US gas inventories are also likely to enter the withdrawal season in October at a seasonally high level.

Recent price developments: Rebound from the lows

US natural gas prices have recovered significantly from the lows of April 2012 but remain at depressed levels by the standards of the past five years. The key Henry Hub, Louisiana benchmark plumbed around a 10-year low of \$1.84/mmBtu on April 20. At the Opal, Wyoming hub gas was selling at the time for an even lower \$1.74/mmBtu. The subsequent recovery took the Henry Hub quote up to a recent peak on 6 July of \$2.94/mmBtu, up 60% on the April low and a six-month high. However, it was still 33% below a year previously. By the third week of July the Henry Hub quote had slipped a little to around \$2.85/mmBtu while the Opal quote was \$2.54/mmBtu. These prices are equivalent to about \$17 and \$15/barrel respectively on an energy equivalent basis so, in principle, a massive arbitrage opportunity still exists given WTI at around \$90/barrel. In our view the key new opportunities for natural gas are in transportation (CNG and LNG) and GTL (gas to liquids) and petrochemical (ethylene and propylene) projects.

The upward trend in gas prices over the past few months has been driven by a combination of speculative activity and sustained very hot weather and rapidly rising natural gas use. Interestingly, some very wide variations in prices at major hubs have surfaced of late. For example, the price at the Algonquin hub hit a recent high of \$8.84/mmBtu on 20 June while the price at Opal was \$2.41/mmBtu. Subsequently, the Algonquin hub quote has slipped to \$6.34/mmBtu but there remains a wide variance to Henry Hub and Opal. The late June spike in the Algonquin quote reflected very hot conditions along the Eastern Seaboard and the location of the hub at a considerable distance from gas supplies. By contrast, the Henry Hub and Opal are close to major areas of gas production.

Exhibit 24: Henry Hub price trend

Source: Bloomberg

Economics. Rex Tillerson, Exxon's chairman and CEO, has famously said the company is "losing its shirt" on US natural gas production. At the April Henry Hub low of \$1.84/mmBtu we believe, in fact, that dry gas realisations were down pretty well to variable production costs. Note this is before allowing for SG&A costs of perhaps \$0.9/mcfe and finding and development costs of \$1-2/mcfe. In practice, however, the situation was not quite as dire as these numbers would suggest given the contribution made by-product natural gas liquids production. This could conceivably add \$2/mcfe to realisations. Nevertheless, even allowing for this factor gas production would still have been distinctly marginal for most producers on a fully accounted basis. It should also be noted that natural gas liquids prices have come under pressure in recent months reflecting an influx of supply stemming from a high level of liquids-rich development activity.

Assuming realisations of just under \$3/mmBtu, we believe that the average dry gas producer should be at breakeven or a little better on a cash basis. This reflects lifting costs of perhaps \$1.5/mcfe for lifting, \$0.9/mcfe for SG&A and \$0.2/mcfe for processing and pipeline tie-in. In the case of a liquids-rich producer there could, in fact, be a significant cash contribution of perhaps \$1.5/mcfe after allowing for extra processing costs. This might be sufficient to roughly cover finding and development costs.

Price outlook: Competition from coal could constrain further price gains

We believe that \$1.84/mmBtu was the low-water mark for the Henry Hub quote this cycle. The key question now concerns the strength and sustainability of the recovery. Bonne Pickens, the legendary oilman and leading advocate for natural gas, believes that the Henry Hub quote will be back to \$4/mmBtu by 2012 year end. We see scope for an enduring recovery over the balance of 2012 and 2013 driven by an expected tightening in the supply/demand relationship stemming from a sharp cutback in drilling activity, well shut-ins and an assumed return to seasonally normal weather conditions during the winter months. After coming in at \$2.43 and \$2.29/mmBtu in the first and second quarters of 2012 we now see the Henry Hub quote averaging \$2.9/m Btu in the third quarter and \$3.7/mmBtu in the fourth quarter. The implied average for full-year 2012 of \$2.83/mmBtu constitutes a downgrade from the previous forecast of \$3.03mmBtu reflecting a slightly less robust than expected trend so far in the third quarter and the sizeable inventory position.

We have also downgraded our Henry Hub forecast for 2013 from \$3.85/mmBtu to \$3.25/mmBtu. This partly reflects the lower carryover from 2012 and partly assumed intensified competition from coal in 2013 in the power generation section. As long as coal prices are soft we suspect that gas prices may struggle to exceed \$3-3.5/mmBtu in the absence of severe weather conditions or major outages.

Exhibit 25: Henry Hub quarterly price scenario

\$/mmBtu	Q1	Q2	Q3	Q4	Average
2008	8.66	11.37	9.06	6.45	8.89
2009	4.54	3.70	3.17	4.37	3.94
2010	5.15	4.15	4.32	3.86	4.37
2011	4.18	4.37	4.12	3.33	4.00
2012	2.43	2.29	2.90e	3.70e	2.83e

Source: Bloomberg, Edison Investment Research

Exhibit 26: Henry Hub natural gas price trend

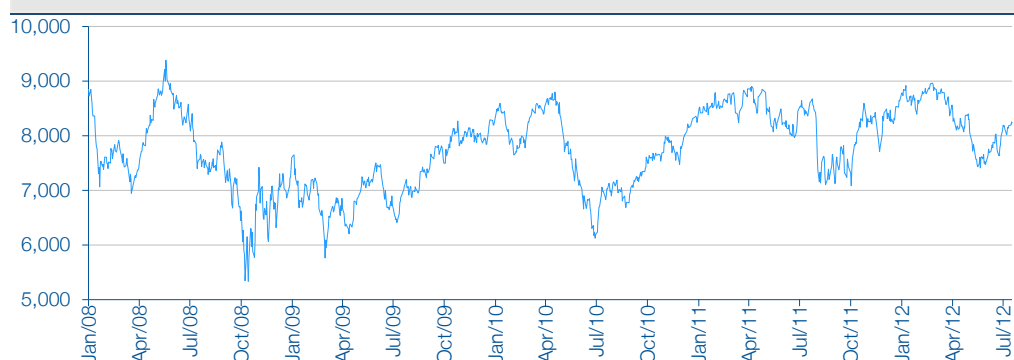
\$/mmBtu	2004	2005	2006	2007	2008	2009	2010	2011	2012e	2013e
	5.85	8.79	6.72	6.96	8.89	3.94	4.37	4.00	2.83	3.25

Source: Bloomberg, Edison Investment Research

Oil and gas sector performance

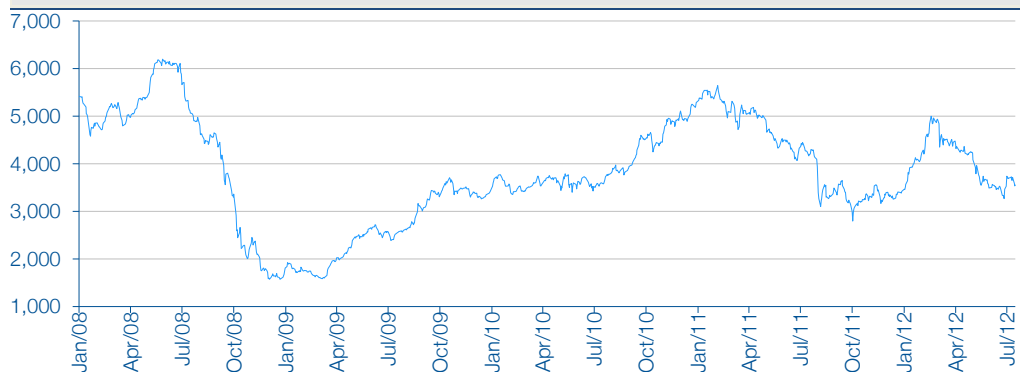
UK: AIM juniors under heavy pressure in Q212, modest subsequent recovery

Not surprisingly perhaps in the light of broader market influences and plunging commodity prices, oil and gas stocks came under heavy pressure in the second quarter of 2012. The FTSE 350 Oil & Gas Index, which is dominated by the majors, fell 17% between the 45-month high in late February 2012 and the recent low on 23 May. Significantly, however, the May low was about 6% above that plumbed in early October when there was a similar period of pressure on oil prices. Since late May, the FTSE 350 Oil & Gas Index has recovered some lost ground. By 18 July the index was up by 11% from the May low but down 2% from a year earlier. The latter is in line with the performance of the FTSE 100. Interestingly, the turning points in the FTSE 350 Oil & Gas Index in 2012 have preceded those in oil by about a month both in February and May.

Exhibit 27: FTSE 350 Oil & Gas Index

Source: Bloomberg

The AIM oil and gas juniors came under considerably greater pressure than their mid and large capitalisation peers in the second quarter. Between the 20 February high and the recent low on 28 June the AIM Oil & Gas Index plunged 35%, taking it to a six-month low. Subsequently, there has been a partial recovery resulting in an 8% gain in the Index. As of 17 July the AIM juniors were 15% down from a year earlier and 43% below the May 2008 high. For perspective, the AIM All-Share Index has fallen 20% over the past year and is off 34% from the 2008 high.

Exhibit 28: AIM Oil & Gas Index

Source: Bloomberg

Exhibit 29: S&P 500 Oil & Gas Index

Source: Bloomberg

USA: Mid-tier independents also show modest recovery from the June low

US E&P concerns also came under heavy pressure in the second quarter as domestic oil and gas prices slid. The S&P 500 Oil & Gas Exploration and Production Index (an index of mid-tier oil and gas independents), for example, fell by 25% from the late February high to the recent low at the beginning of June. Subsequently the index has trended higher and by 17 July was up 11% from the recent low. This left it down 18% from a year ago, which constitutes a significant underperformance compared with the 5% gain in the S&P 500 over the same period. The more broadly based S&P 500 Oil & Gas Index, which includes the majors, not surprisingly weathered the second quarter slump in domestic oil and gas prices considerably better than the mid-tier independents. From the late February high the S&P 500 Oil & Gas Index has only fallen by 7% and is off from a year earlier by 6%. In a market hungry for cash flow, a key strength of the larger energy stocks at this juncture is yield. Exxon for example yields 2.7% while ConocoPhillips, Chevron, Occidental Petroleum and Valero Energy are on 4.7%, 3.4%, 2.5% and 2.4% respectively.

Exhibit 30: S&P 500 Oil & Gas Exploration and Production Index

Source: Bloomberg

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