

# Oil Sketches

Commodities Research

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## Burning violins

Like many other markets across commodities and elsewhere, the oil market is currently in a state of significant disequilibrium. Over a short period of time, the market has had to price in a very sharp reduction in expectations for global GDP growth next year in conditions of falling volumes, with trading activity being further subject to a sharp revaluation in the relative pricing of risk and liquidity. All in all, it is perhaps no great surprise that such a backdrop should lead to some significant short-run undershooting of prices. However, there are two other key features of the current price correction that seem to jar with any idea that prices are returning to some low business-as-usual level.

The first new feature is the speed with which the supply side has made its initial reaction to falling prices and the repricing of liquidity. A sizeable chunk of incremental activity has been frozen, some significant projects have been delayed very early in the down cycle, and generally throughout the oil patch there is the sound of moving parts slowing down. The speed with which the supply side has screamed in pain this time is dramatically faster than in previous price cycles. Even in the 1998 to 1999 swing down to \$10 per barrel there was less immediate and significant response in terms of the slowing of future projects. Likewise, soon after the 1986 crash, activity was buoyed by the combination of lower taxes, immediate application of technology and cost saving and new frontiers for development. This time industry costs will fall simply because there is less activity, but the previous scope for huge savings through greater efficiency is more restricted, and the new frontiers seem more limited and more challenging. In all, there are a lot of further reasons why cash is king for the oil industry right now.

The other feature about the current disequilibrium is that while it is extreme, it is not new in that the market has not really been in any stable equilibrium for more than five years. In particular, no consensus has formed in recent years as to what the long-run equilibrium looks like, and as to which price will bring long-run demand and capacity into a sustainable balance. In the recent push down, and for the first time in five years, the back end of the curve has started to get a bit sticky. Prices have had trouble staying much below \$90 per barrel at the back end, resulting in ever greater contangos as the front end gets hammered down. It is perhaps too early to think of \$90 as the new \$20 in terms of long-run expectations. However, it is not too early to think of periods in which prices move below \$90 as being likely to intensify the longer-run supply challenges. In the short run there is likely to be significant demand-side weakness, matched by sharp withdrawals of OPEC oil. However, further along the curve it may well be that the legacy of the current pause in both aspirations and ability to expand capacity will be severe.

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**Sources** *Data in this report comes from the following sources unless otherwise noted, and from Barclays Capital calculations. Pages 11 to 14: Energy Information Administration Short Term Energy Outlook, Energy Intelligence Group, International Energy Agency Oil Market Report, Middle East Economic Survey, OPEC Monthly Oil Market Report, Reuters. Pages 16 to 17: US Energy Information Administration. Pages 18 to 19: UK Department for Business, Enterprise and Regulatory Reform. Pages 20 to 21: Petroleos Mexicanos Indicadores Petroleros. Pages 22 to 23: Baker-Hughes. Pages 24 to 26: Ministry of Economy Trade and Industry, Preliminary Report on Petroleum Statistics. Page 27: Norwegian Petroleum Directorate. Page 28: China Customs. Page 29 to 34: Energy Information Administration Petroleum Supply Monthly. Pages 40 to 42: International Energy Agency Oil Market Report, OPEC Monthly Oil Market Report, Energy Information Administration Short Term Energy Outlook.*

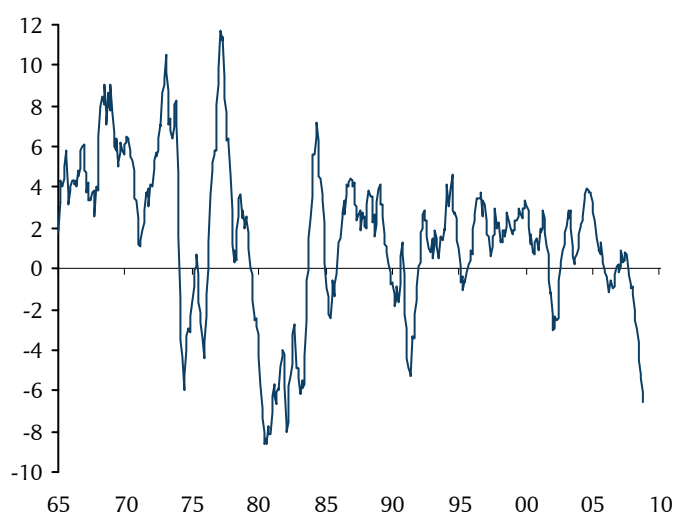
# Burning violins

*Dance me to your beauty with a burning violin,  
Dance me through the panic 'til I'm gathered safely in,  
Lift me like an olive branch and be my homeward dove,  
Dance me to the end of love.*

*Leonard Cohen, Dance me to the end of love.*

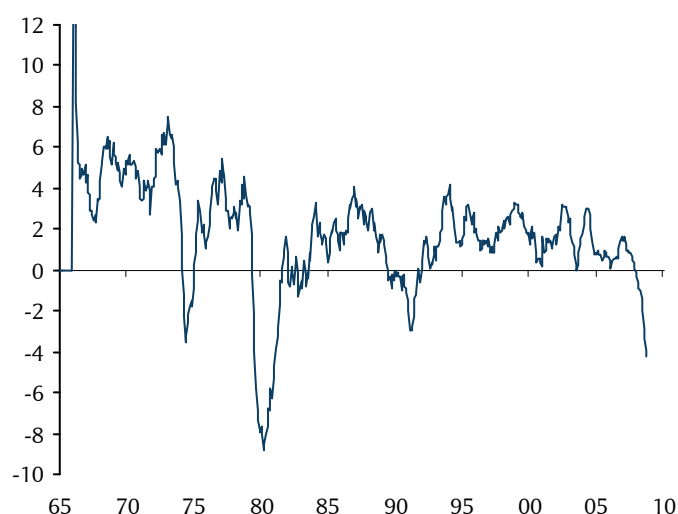
The titles we have used for *Oil Sketches* this year seem to have been conditioned by a gathering sense of gloom. In recent months, we have gone from *Twist in My Sobriety*, onto *Twilight World*, *Dark Rainbow* and *Blue Moves*. Not exactly cheerful then. If we were using Tanita Tikaram titles back in April, then we must now be in full-blown Leonard Cohen territory. Indeed, the global economic situation became gloomier so fast that we have not even had to pause at Lloyd Cole or Suzanne Vega. Straight to Leonard Cohen without passing go. And most worryingly for everyone involved, we have more than enough Leonard Cohen albums to provide enough titles to keep us going for a very long time.

**Figure 1: y/y % change in rolling 6-month average of total US oil demand**



Source: Barclays Capital, EIA

**Figure 2: y/y % change in rolling 6-month average of US gasoline demand**



Source: Barclays Capital, EIA

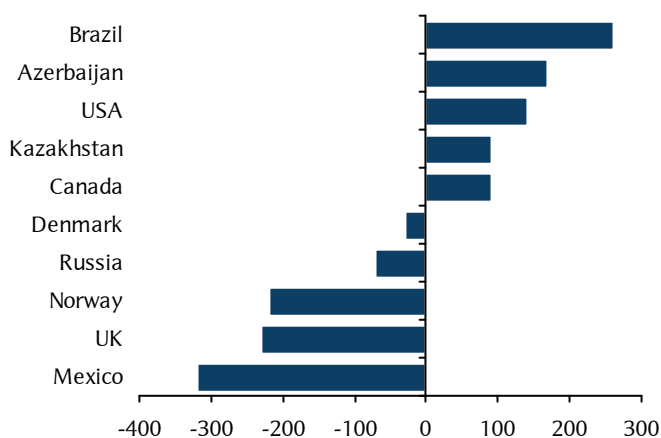
Our choice of oil market soundtrack has clearly become a bit extreme. In fact “extreme” appears to us as the most suitable description of oil market behaviour in 2008. There has been a series of not just two standard deviation events, but three, four and five standard deviation events. Price fluctuations have been extreme, with prices moving along in a remarkably wide range of more than \$85 per barrel. Extreme is also the best description for the scale of demand weakness relative to initial expectations, and extreme is also the word to describe the weakness of non-OPEC supplies, with additional output having gone from little to none, and then to less than none during the first three quarters of 2008. Extreme events in the broader financial environment have triggered extreme price reactions in the narrower context of the oil market. In such a framework of extreme changes in both perceptions and information flow, prices have tended to go through a cycle of overshooting and undershooting the possible range of fundamentally based values.

A tendency to attach equal weights to the opposing forces dominating the oil market has been one of the key pricing dynamics of 2008. H1 08 was characterised by a worsening in supply side concerns (both real and sometimes imagined), fed by a flow of very weak non-OPEC production data. By contrast, the combination of weaker oil demand data and the sheer scale of problems affecting financial markets have forcefully moved to the forefront in recent months. The rapid move to sharply lower GDP growth expectations has occurred at the same time as a reduction in liquidity and an increased reluctance to bear risk, adding to the scale of the market disequilibrium in commodities. Price action has reflected the evolution of those perceptions, with recent highs and lows resulting from a somewhat uneven analysis of the two sides of the oil market.

Part of that bias in focus has come from the weakness in US demand in particular being, well, extreme. Figure 1 is an update of a figure first used in the August *Oil Sketches*, and shows our favoured measure for comparing demand dynamics across time (ie, the y/y change in the rolling six-month average). Adding in the data (including unrevised data) up to October puts this measure at its weakest since 1982, having now moved beyond the weakness seen as a result of the first Gulf War in 1990-1. The same measure is a little less startling in the case of US gasoline demand as is shown in Figure 2, but it is at its weakest since 1981. Price dynamics and some y/y effects mean that neither Figure 1 nor Figure 2 are likely to end up quite as weak as they were at their nadir in 1980, but they are certainly getting close enough to act as a key focus for the market.

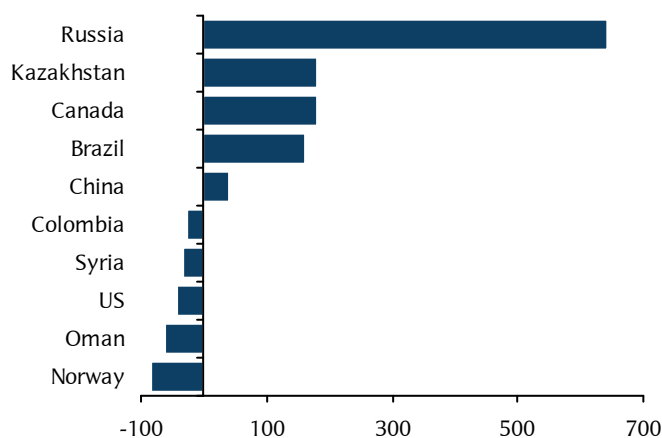
Having been through US demand dynamics in more detail in an earlier report, this month we thought we would try to add a little more balance to a market which is currently still heavily focused on demand-side issues. In our view, extreme non-OPEC supply weakness is not set to remain an isolated episode of 2008. The repeated difficulties faced by non-OPEC producers in responding to price signals, and the increasing scale of that failure indicates the existence of structural hurdles to growth. Overcoming those hurdles will prove increasingly difficult, as credit issues and lower prices will put further pressure on companies to preserve liquidity and to cut back on investment. Indeed, we cannot detect any significant signal in the current supply landscape suggesting we are about to turn the corner and stop the bleed down of non-OPEC supplies, and our projections for non-OPEC output over the next 15 months continue to point to a flat to falling growth profile.

**Figure 3: Forecast for non-OPEC supply growth in 2009 (kb/d): five largest 'gainers' and 'losers'**



Source: Barclays Capital

**Figure 4: Non-OPEC supply growth in 2002 (kb/d): five largest 'gainers' and 'losers'**

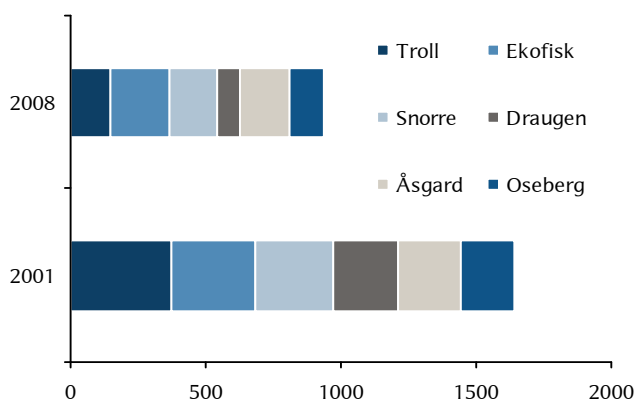


Source: BP Statistical Review, Barclays Capital

Figure 3 and Figure 4 show a breakdown of the composition of non-OPEC production growth in 2009 (as forecasted by Barclays Capital) and in 2002, displaying the five

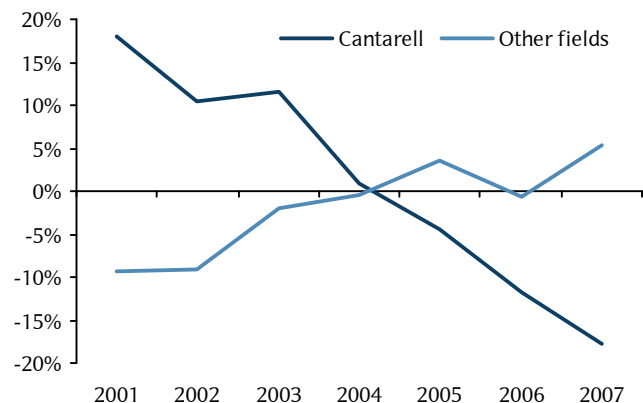
largest supply 'gainers' and the five largest supply 'losers' among non-OPEC producers. The year 2002 was selected as being the last time when the annual increase in non-OPEC supply growth exceeded 1 mb/d whereas, if our expectations are realised, 2009 would mark the first set of two consecutive years of overall non-OPEC production declines since 1993. However, current non-OPEC supply weakness does not hinge on the dynamics of a single country. Contracting non-OPEC output in the first half of the past decade was closely linked to the collapse of the Soviet Union and was not symptomatic of any endemic weakness in non-OPEC supply as a whole. A key facet, which stands out when comparing Figure 3 and Figure 4, is the significant increase in the magnitude of the production fall across the five biggest 'losers'. That fall has trebled between 2002 and 2008, chiefly due to a rapid steepening of production decline rates in Mexico and the North Sea.

**Figure 5: Oil production trends at selected Norwegian oil fields (kb/d)**



Source :Norwegian Petroleum Directorate, Barclays Capital

**Figure 6: Mexican oil production trends, y/y percentage change in output**



Source: Pemex, Barclays Capital

In the case of UK and Norway, the persistent and widespread nature of the output losses suggests systematic weakness in their underlying supply base. Field by field data (as shown in the relevant country sections of this report) is revealing. After peaking in 1999, UK production has declined in every year thereafter, with the exception of 2007 when the start-up of the big Buzzard field helped to arrest the output decline temporarily. The supply improvement has proved short lived however, with UK oil production resuming a downward trend this year. The entrenched weakness in UK oil production is a primary result of the ageing structure of its oil reservoirs. Some three-quarters of the forty largest UK oil fields have recorded production declines so far in 2008, whereas just one field (Buzzard) accounts for half of the incremental volumes. With proven oil reserves on a falling trend, with rig counts having stalled and with no upcoming field of the size of Buzzard, the UK oil sector is poised for continued weakness. A similar picture can be traced for Norway where all the large fields, which fuelled a phase of strong production growth in the 1990s, are now in steep decline. Norwegian production peaked in July 2001. At that time, there were six fields with production greater than 200 thousand b/d, with combined output of 1.64 mb/d. Seven years later just one of those six fields (Ekofisk) is still producing above 200 thousand b/d, whereas the aggregate output from those six fields has declined by a cumulative 700 thousand b/d (see Figure 5).

Mexican production trends continue to be heavily influenced by the precipitous fall at the country's largest oil field Cantarell, the production of which accounts for some two-thirds of domestic oil output. Cantarell, and Mexican oil production, peaked in 2004 and has followed a steepening downwards trajectory since then. As shown in Figure 6, y/y production declines at Cantarell have accelerated markedly and now stand close to

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25%. Moreover, output gains have almost entirely originated from one sole producing centre, the Ku-Zaap-Maloob complex. Yet, with production from the KZM fields gradually approaching targeted levels and no other major project scheduled to come on stream over the next few years, prospects for Mexican oil production do not appear to us to be brightening yet.

The scale of output declines from mature non-OPEC areas has shifted the burden of growth towards less-established producing regions and unconventional hydrocarbon sources. Filling the void left by shrinking Mexican and North Sea output will require an extra 700-800 thousand b/d to be produced just to keep non-OPEC production flat. A glance back at Figure 3 and Figure 4 shows that Russia's potential to bridge that gap has disappeared. Following a period of strong recovery in the early part of the decade, the growth momentum in Russian production has gradually faded, with output growth having turned negative this year. While the subject is multi-layered enough as to leave us to want to leave a fuller discussion of Russian output trends to another time, it suffices to say that we would signal significant downward risk to our forecast of output decline in Russia in 2009.

The above has some profound implications with respect to the future of non-OPEC supplies. Offsetting increasing declines from an increasing number of countries poses problems of feasibility and scalability of projects in those countries, which have the necessary resource potential. Crucially also, not every barrel looks the same. The ongoing replacement of the supply base has introduced a significant element of asymmetry, which is the substitution of an easy-to-extract barrel with a difficult-to-extract one. Canada and Brazil are perhaps the two best examples of the potential and challenges associated with current pockets of non-OPEC supply growth. Both countries have vast reserves, rank among major non-OPEC producers and are involved in huge expansion programmes. Yet, both countries are sending signals that scaling up capacity according to schedule might be a more difficult task than originally thought. Worse, in both cases the speed of development does already appear to be very vulnerable to credit market conditions.

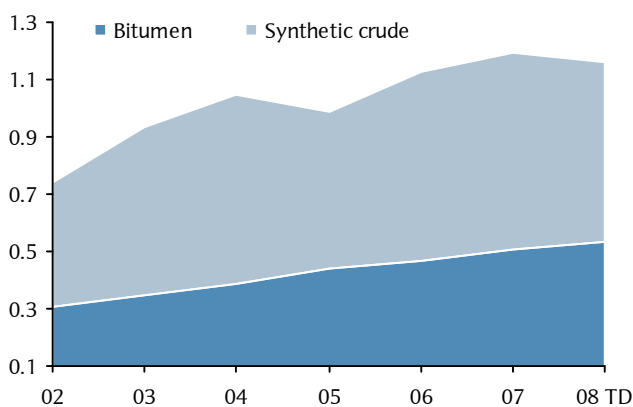
In 2007 Canada ranked as the fourth-largest non-OPEC producer, with oil liquids production of 3.1 mb/d. Between 2002 and 2007, Canadian crude oil output has increased steadily, rising by a cumulative 0.4 mb/d, and most estimates point to an accelerating growth profile over the coming years, as new oil sands projects become operational. At present, some \$170bn worth of oil sands-related projects are underway or have been proposed, and investments in 2008 are estimated to be in the region of \$20bn. Notwithstanding the widespread enthusiasm around Canadian oil sands, the flow of output and information from producers suggest the need for caution in assessing future prospects for domestic oil production. Crucially, planned capacity investments might not be attainable at current budgeted costs. In recent years, infrastructure, material and manpower constraints have been massively underestimated, leading to substantial cost overruns. Further ahead, slower economic activity could help ease some of the extreme tightness across the supply chain. Yet for now, Canadian oil companies are faced with the major challenge of juggling massive cost increases and restricted access to credit. In most cases, falling oil prices have substantially eroded project economics and with prices close to breakeven levels, companies might reconsider some of their expansion programmes. In the near term, out of three key upgrading projects scheduled to come on line in Q4 08-Q1 09, one was cancelled recently and two incurred huge cost overruns.

As is detailed in Figure 8 the partially completed BA Energy Hearthland oil sands upgrader, acquired by Calgary-based Value Creation in April, was mothballed in mid-

September whereas final cost estimates for the integrated Horizon project and OPTI/Nexen Long Lake projects have outpaced initial cost projections by a very wide margin (40% and 60% respectively). Moreover, in mid-September PetroCanada announced a 50% increase in the preliminary cost estimates of the first phase of its massive Fort-Hill project (scheduled to come on line in 2012) spurring market fears that its viability could be compromised due to funding issues. Further impediments have been reported this October, with Shell, Suncor and Nexen Ink delaying expansion plans for their respective oil sands projects. This adds evidence to some producers' comments that the flow of investments and output associated to Canadian oil sands could slow substantially at prices below \$90 per barrel.

While short-term production trends should be impacted little by a pull back on investments, current price dynamics, particularly for far forward values, could be more greatly affected. Perception of a structural mismatch between incremental demand and incremental non-OPEC supplies has proved a primary factor behind the upwards shift of the oil curve in recent years. The long-term nature of that fundamental imbalance means that its effects are set to outlast the current phase of demand weakness. In such circumstances, the need to prevent medium-term balances from tightening too aggressively might help support back of the curve prices at levels where enough capacity investment can be generated. However, our concern remains that short-run price and credit dynamics have already begun to deepen the nature of the potential supply problems further down the curve.

**Figure 7: Albertan oil sands production (mb/d)**



Source: Alberta Energy Resources and Conservation Board, Barclays Capital

**Figure 8: Selected Canadian oil sands projects: cancellations and cost overruns**

| Projects            | Operator       | Capacity | Start up date | Cost overruns |
|---------------------|----------------|----------|---------------|---------------|
| Horizon Phase 1     | CNRL           | 70kb/d   | 4Q08          | 36%           |
| Long lake Phase 1   | OPTI/Nexen     | 58kb/d   | Oct-08        | 60%           |
| Heartland (3phases) | Value Creation | 260kb/d  | 4Q08          | halted        |
| Fort Hills Phase 1  | PetroCanada    | 140kb/d  | 2012          | 50%           |
| Athabasca Expansion | Shell          | 100kb/d  | delayed       |               |
| Long lake Phase 2   | Nexen Inc      | 120kb/d  | delayed       |               |
| Voyageur Expansion  | Suncor         | 200kb/d  | delayed       |               |

Source: Company websites, CAPP, Reuters, Barclays Capital

Note: Horizon, Long Lake and Fort Hills are integrated oil sands projects, consisting of mining or in-situ extraction operation plus upgrading facilities. Heartland is a merchant bitumen upgrader.

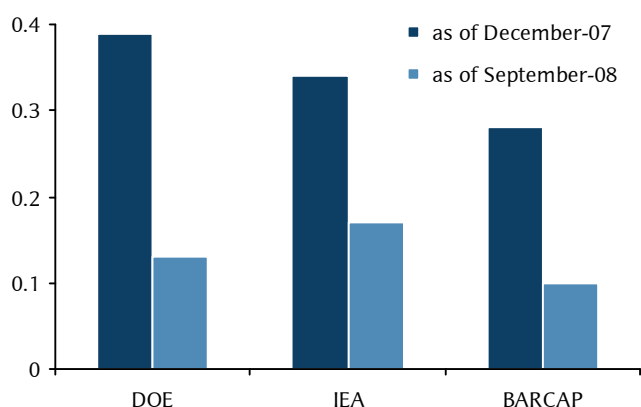
Source: Company websites, CAPP, Reuters, Barclays Capital

While Canadian oil sands are of crucial importance for the medium-term outlook of non-OPEC supplies, Brazilian oil production trends will exert a significant influence on the dynamics of non-OPEC output in 2009. As outlined in Figure 3 we expect Brazil to prove the single biggest source of non-OPEC supply growth next year, as projects currently in the pipeline should allow for production growth of some 250 thousand b/d. While such an aggressive growth profile is in principle achievable, is not free of risk. The projected output increase would represent the biggest annual addition ever realised in Brazil and appears heavily dependent on the smooth and timely execution of a small number of technically challenging expansions. Should we use history as guidance, then those production estimates should be regarded with scepticism. Brazilian production has disappointed sharply so far this year, confounding initial expectations for a year of very strong growth (see Figure 9). This year's relatively subdued output performance illustrates well the type of challenge the Brazilian oil sector is faced with. Oil resources in the country are concentrated in deepwater offshore areas, where field development

is associated with a high level of project risk. Broadly speaking, the exploitation of Brazilian rich hydrocarbon endowment poses greater-than-average financial, technical and managerial challenges. When occurring, slippages in bringing new fields on stream tend to be lengthening, and delays in project starts up of more than one year are relatively common.

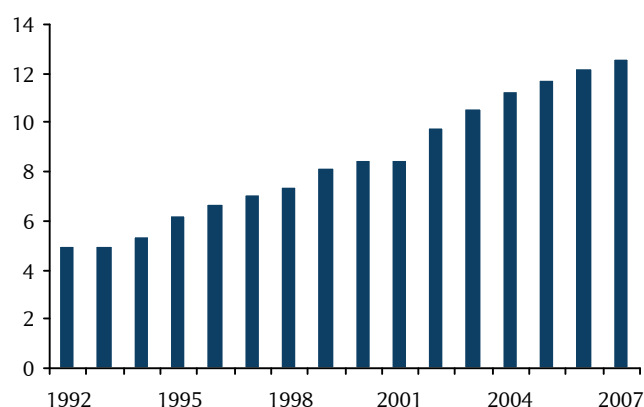
Looking further ahead, the complexity of Brazilian hydrocarbon supply base is set to grow even further. Recent exploration activity in the Santos Basin has indicated that this province could host huge hydrocarbon deposits. The increased level of attention placed on the region largely arises from the successful discovery of Tupi, a large ultra-deep water formation in the subsalt layer of the Santos Basin. Preliminary estimates peg Tupi's recoverable reserves at between five and eight billion barrels. At this size, Tupi would be the largest discovery ever made in Brazil and the largest in the world since Kashagan in Kazakhstan in 2000. The announcement of Tupi was understandably met with considerable optimism. Yet there are several reasons for some concern that the actual path of production may have some twists. The major challenge involves the complex geology of the reservoir which creates a series of interconnected issues. To begin with, the thick salt layer which encrusts the field has hindered the ability to conduct a proper assessment of the size of the field and its potential associated production rates. Secondly, the exploitation of Tupi's potential will require a pioneering feat in terms of technology of oil drilling and extraction. The field is found in deeper sea water than any previous discovery, some 7km beneath sea-level, as well as 2km beneath a thick salt layer. This will require cutting-edge extraction technique and new well technology that can survive the corrosive nature of the surrounding salt layer as well as the deep-sea environment. Third, the geography of the field creates accessibility issues, being located some 300 km from the Brazilian coast, which places the site of potential rigs at the limit of general helicopter transit ranges. Lastly, costs involved with the development of the project are enormous. Petrobras has earmarked nearly \$100 billion for investment in Brazil over the 2008-2012 period, as reported in its latest business plan, with industry estimates suggesting that up to \$70 billion of this capital will be needed to be allocated towards the equipment acquisitions required for Tupi.

**Figure 9: Forecasts for Brazilian production growth in 2008 (mb/d)**



Source: DOE, IEA, Barclays Capital

**Figure 10: Brazilian oil reserves have continued to grow, reflecting new field finds (billion barrels)**



Source: BP Statistical Review, Barclays Capital

The challenges described above, point to a clear distinction between resources and production. Having oil under the ground does not automatically imply that it is going to flow above ground and the ongoing shift in the location, composition and geography of the world's resource base has made that link even less precise. On average, resource holders have struggled to respond fully to the growing complexity of projects. By

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contrast, most countries have adopted harder fiscal regimes while restricting access to resources. Current non-OPEC production trends reflect this twofold dynamic, whereby geological and investment conditions have both become more challenging. Falling prices and credit constraints run the risk of making the future of non-OPEC supplies even grimmer than it would have otherwise been. In this context, the intensification of non-OPEC supply weakness in 2008 represents the natural evolution of dynamics which have been at work for a while and that, in our view, will not change for another while. At present, structural supply-side matters are playing little role in driving prices. Dysfunctional credit markets and the sudden and sharp worsening of the economic outlook have emerged as the main price dynamic recently. The severity of the current financial crisis implies that the oil market might well remain stuck between the influence of external forces and demand-side fears for the time being. Yet, the key question remains at which price the market will normalise once the current phase of extreme market turbulence is behind us. That recalibration process will involve a careful repricing of a new market balance, characterised by much weaker conditions on both the demand and supply side; and in our view that new equilibrium is more likely to be achieved at prices significantly higher than recent prices at the front end of the curve.

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# OPEC production estimates

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## OPEC output

The average of our sample of third party estimates of OPEC output in September is 32.28 mb/d, a m/m fall of 304 thousand b/d. That decline was primarily due to output falls of 141 thousand b/d in Iraq and 119 thousand b/d in Saudi Arabia. The range of estimates for the fall in Saudi output in September runs from 38 thousand b/d to 200 thousand b/d. The first indications for October levels are slightly lower than in September. For example, the Reuters survey implies a fall of 110 thousand b/d in total OPEC output to 32.23 mb/d, with Saudi Arabian output falling by further 100 thousand b/d. With output cuts having become effective as of the start of November for all members bar Iraq and Indonesia, (the latter which is soon to exit the organisation), OPEC output is set to fall more sharply in November and to hit its nadir for the year in December.

Figure 11: OPEC production and quotas, mb/d

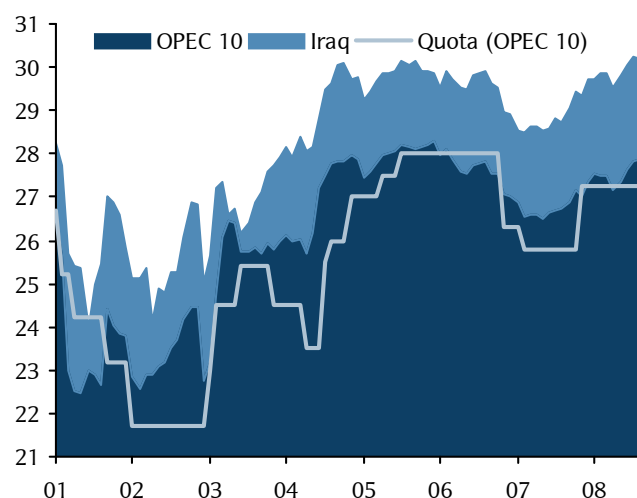


Figure 12: Estimates of OPEC production, September 2008, mb/d

|                | EIA          | EIG          | IEA          | MEES         | Platt's      | Reuters      | Average      |
|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Algeria        | 1.44         | 1.43         | 1.37         | 1.39         | 1.40         | 1.41         | 1.41         |
| Angola         | 1.78         | 1.76         | 1.75         | 1.80         | 1.80         | 1.80         | 1.78         |
| Ecuador        | 0.51         | 0.49         | 0.50         | 0.50         | 0.50         | 0.50         | 0.50         |
| Indonesia      | 0.86         | 0.83         | 0.86         | 0.86         | 0.86         | 0.86         | 0.86         |
| Iran           | 3.90         | 3.80         | 3.97         | 3.90         | 3.98         | 4.00         | 3.93         |
| Iraq           | 2.35         | 2.07         | 2.19         | 2.21         | 2.29         | 2.21         | 2.22         |
| Kuwait         | 2.60         | 2.56         | 2.60         | 2.60         | 2.62         | 2.61         | 2.60         |
| Libya          | 1.74         | 1.75         | 1.70         | 1.72         | 1.70         | 1.70         | 1.72         |
| Nigeria        | 1.90         | 2.14         | 1.98         | 2.02         | 1.95         | 1.90         | 1.98         |
| Qatar          | 0.87         | 0.85         | 0.87         | 0.85         | 0.85         | 0.86         | 0.86         |
| Saudi Arabia   | 9.40         | 9.36         | 9.45         | 9.50         | 9.50         | 9.50         | 9.45         |
| UAE            | 2.60         | 2.61         | 2.66         | 2.65         | 2.63         | 2.62         | 2.63         |
| Venezuela      | 2.39         | 2.22         | 2.37         | 2.40         | 2.39         | 2.37         | 2.36         |
| <b>OPEC</b>    | <b>32.34</b> | <b>31.85</b> | <b>32.25</b> | <b>32.40</b> | <b>32.47</b> | <b>32.34</b> | <b>32.28</b> |
| <b>OPEC 10</b> | <b>27.70</b> | <b>27.55</b> | <b>27.81</b> | <b>27.89</b> | <b>27.88</b> | <b>27.83</b> | <b>27.78</b> |

Figure 13: Estimates of change in production over previous month, thousand b/d

|                | EIA         | EIG         | IEA         | MEES        | Platt's     | Reuters     | Average     |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Algeria        | 0           | 0           | 0           | -10         | 0           | 10          | 0           |
| Angola         | -70         | -135        | -100        | -50         | -100        | -50         | -84         |
| Ecuador        | 20          | 5           | 0           | 0           | -10         | 0           | 3           |
| Indonesia      | 0           | -5          | -10         | 0           | 0           | 0           | -3          |
| Iran           | 0           | 0           | -130        | -100        | -20         | -50         | -50         |
| Iraq           | -100        | -228        | -140        | -180        | -110        | -90         | -141        |
| Kuwait         | 0           | -38         | -15         | 0           | 20          | 10          | -4          |
| Libya          | 0           | 120         | 50          | 20          | 50          | 20          | 43          |
| Nigeria        | 0           | 226         | 0           | 70          | 0           | -60         | 39          |
| Qatar          | 0           | 0           | -10         | 10          | 0           | 0           | 0           |
| Saudi Arabia   | -200        | -38         | -55         | -100        | -170        | -150        | -119        |
| UAE            | 0           | -25         | 0           | 0           | 0           | -10         | -6          |
| Venezuela      | 0           | 5           | 60          | 10          | 0           | 10          | 14          |
| <b>OPEC</b>    | <b>-350</b> | <b>-113</b> | <b>-330</b> | <b>-330</b> | <b>-340</b> | <b>-360</b> | <b>-304</b> |
| <b>OPEC 10</b> | <b>-200</b> | <b>245</b>  | <b>-90</b>  | <b>-100</b> | <b>-120</b> | <b>-220</b> | <b>-81</b>  |

## Range and average of OPEC output estimates

Figure 14: Estimates of Saudi Arabian output (mb/d)

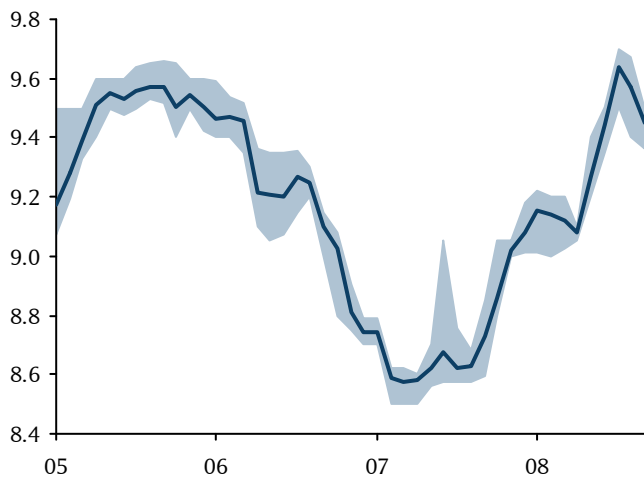


Figure 15: Estimates of Iranian output (mb/d)

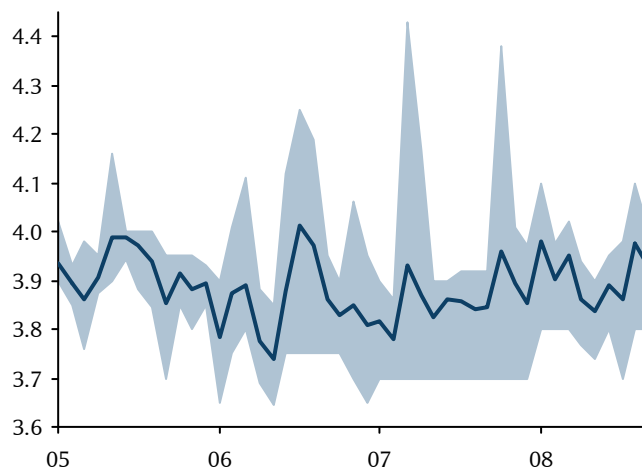


Figure 16: Estimates of Venezuelan output (m/d)

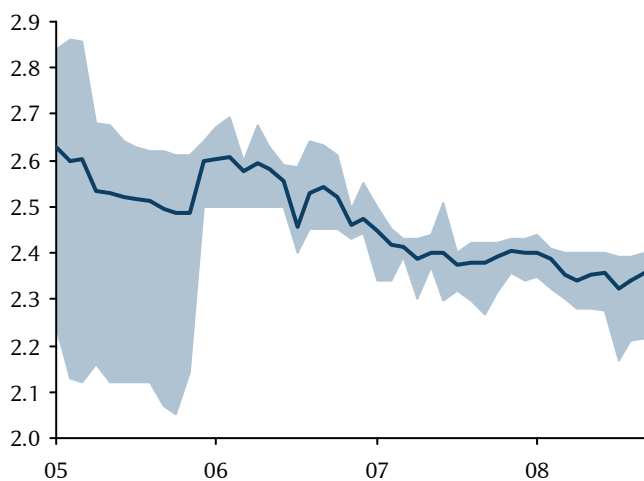


Figure 17: Estimates of UAE output (mb/d)

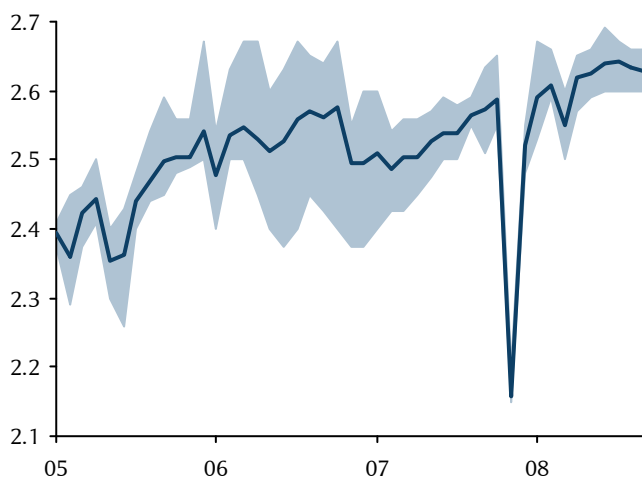


Figure 18: Estimates of Kuwaiti output (mb/d)

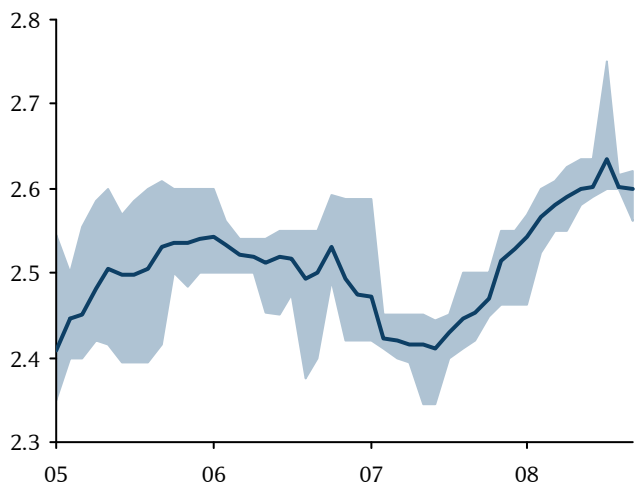
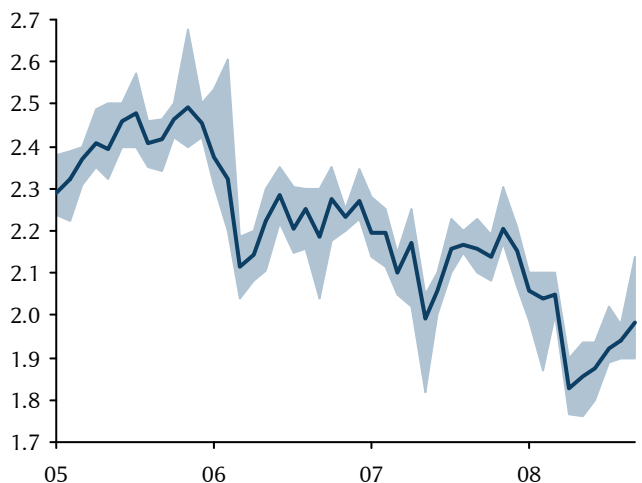


Figure 19: Estimates of Nigerian output (mb/d)



## Range and average of OPEC output estimates

Figure 20: Estimates of Libyan output (mb/d)

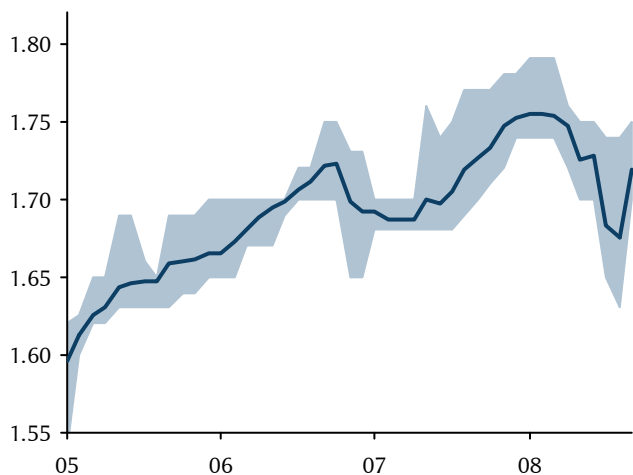


Figure 21: Estimates of Algerian output (mb/d)

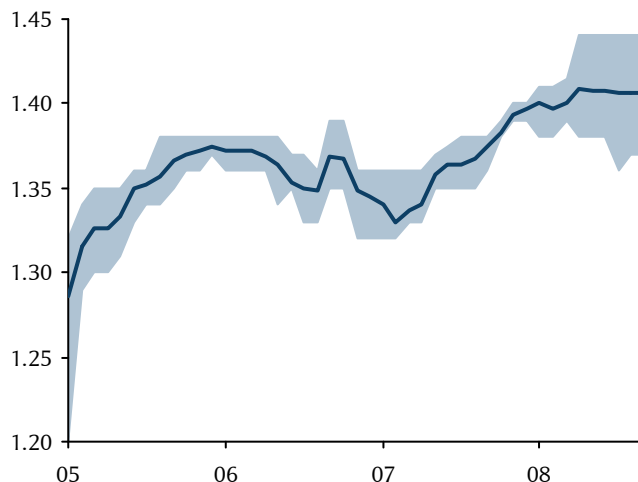


Figure 22: Estimates of Indonesian output (m/d)

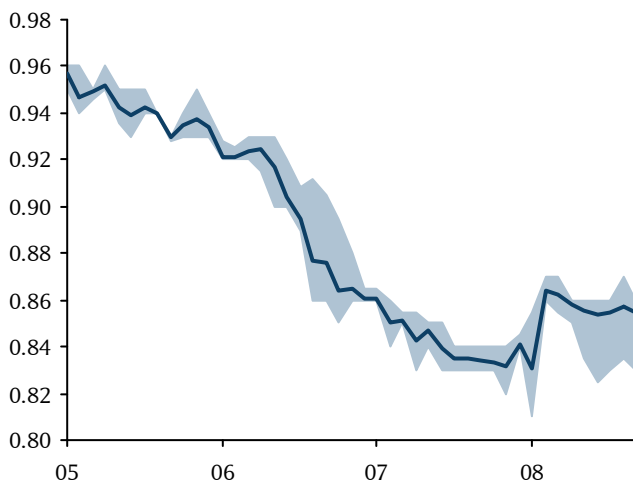


Figure 23: Estimates of Qatari output (mb/d)

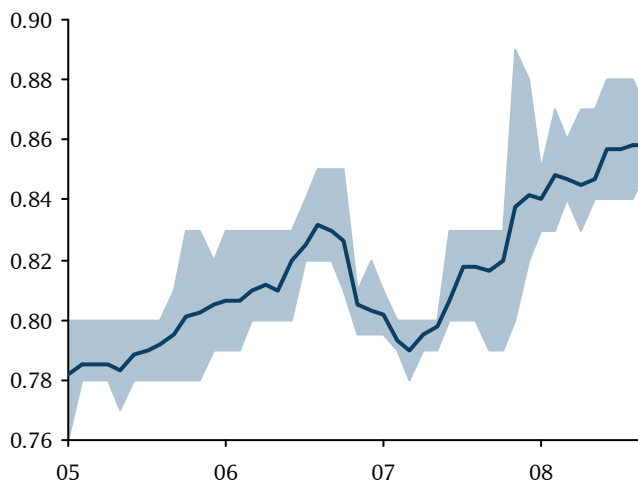


Figure 24: Estimates of Iraqi output (mb/d)

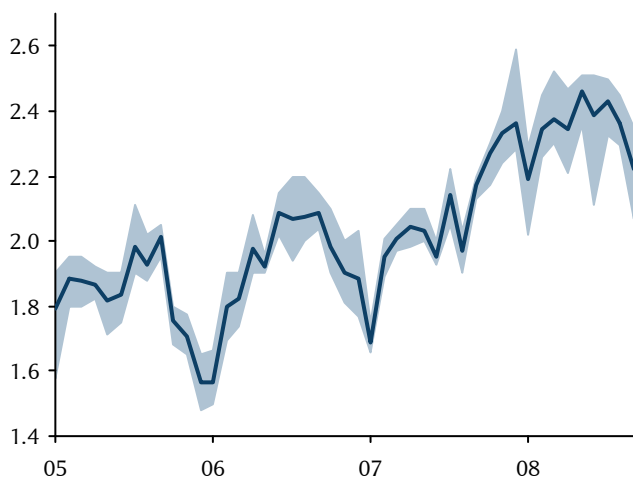
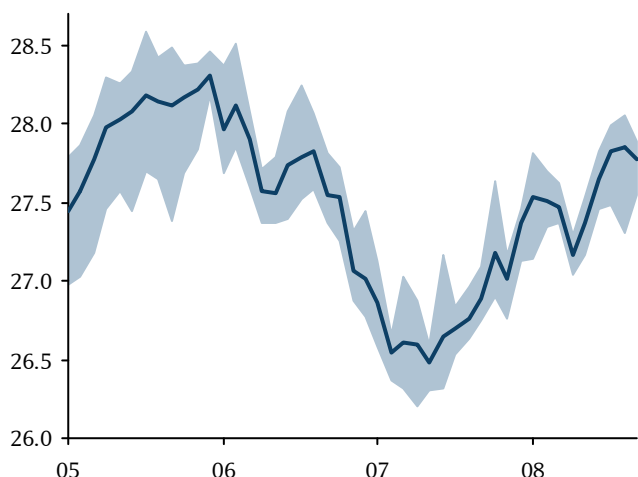


Figure 25: Estimates of OPEC 10 output (mb/d)



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## Monthly data sources

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## US crude oil imports

US crude oil imports ran at 10.27 mb/d in August, the highest level since September 2007 and only the second time this year that the flow has exceeded 10 mb/d. The m/m increase was 192 thousand b/d, with increases from Nigeria (higher by 289 thousand b/d and above 1 mb/d for the first time since April) and also from Algeria, helping to offset declines from Angola, Canada and Saudi Arabia. For the year-to-date, a 249 thousand b/d decrease in flows from NAFTA members has been compensated for by 311 thousand b/d more from the Middle East. All of the m/m increase was light crude, although light crude flows were lower y/y by 202 thousand b/d. Despite that, other changes in flows meant that the volume weighted average API gravity was 28.86 degrees in August, which was almost exactly unchanged y/y.

Figure 27: Source of crude oil imports, August 2008

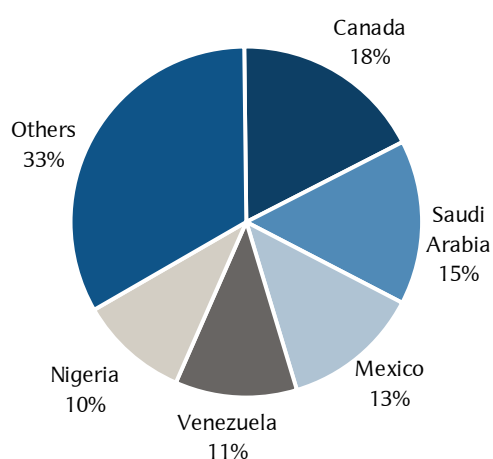


Figure 28: Imports and 12-month average (mb/d)

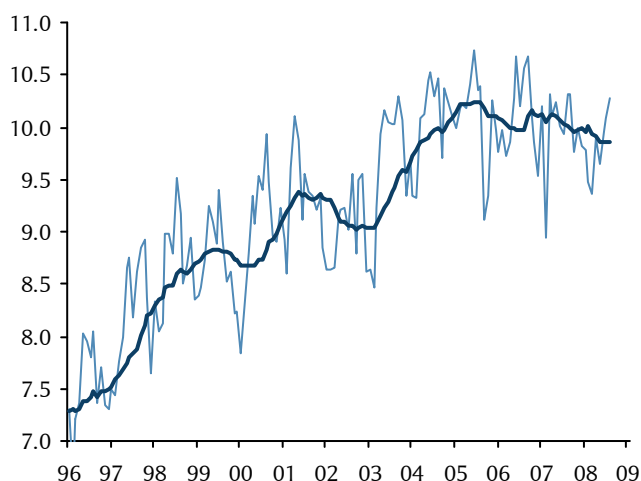
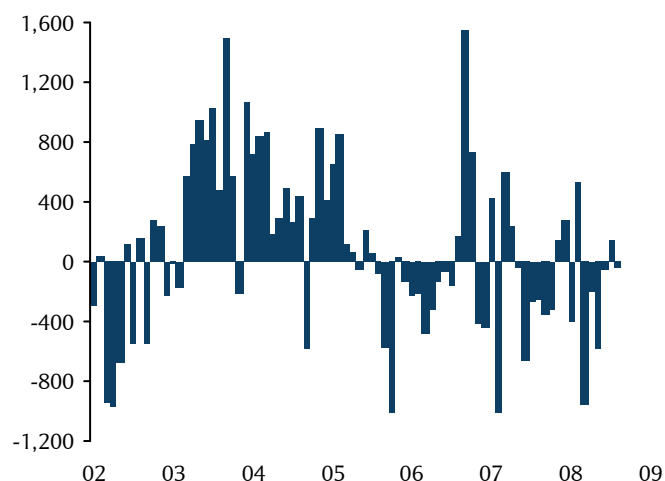


Figure 26: Source of crude oil imports (thousand b/d)

|                     | Aug 08        | change from |            | 2008         | ch from     |
|---------------------|---------------|-------------|------------|--------------|-------------|
|                     |               | Jul 08      | Aug 07     | to date      | 2007        |
| Canada              | 1,833         | -127        | -135       | 1,878        | -3          |
| Saudi Arabia        | 1,528         | -117        | 70         | 1,521        | 114         |
| Mexico              | 1,292         | 92          | -88        | 1,200        | -246        |
| Venezuela           | 1,146         | -41         | 10         | 1,042        | -77         |
| Nigeria             | 1,030         | 289         | -170       | 989          | -39         |
| Iraq                | 663           | -28         | 142        | 671          | 197         |
| Angola              | 483           | -157        | 83         | 510          | -3          |
| Algeria             | 348           | 116         | -224       | 305          | -204        |
| Ecuador             | 291           | 66          | 51         | 209          | 13          |
| Colombia            | 247           | 69          | 95         | 188          | 64          |
| Kuwait              | 198           | 80          | 59         | 200          | 16          |
| Brazil              | 169           | -72         | -81        | 217          | 49          |
| Chad                | 139           | 31          | 77         | 106          | 40          |
| Azerbaijan          | 133           | -1          | 100        | 67           | 20          |
| Equatorial Guinea   | 123           | 57          | 123        | 68           | 13          |
| Russia              | 120           | -82         | 30         | 122          | -1          |
| Libya               | 81            | 11          | -23        | 76           | -8          |
| Gabon               | 69            | -17         | 7          | 51           | -19         |
| Australia           | 64            | 39          | 48         | 33           | 31          |
| Congo (Brazzaville) | 57            | 11          | 13         | 63           | -6          |
| Others              | 255           | -26         | -222       | 293          | -158        |
| <b>TOTAL</b>        | <b>10,269</b> | <b>192</b>  | <b>-38</b> | <b>9,811</b> | <b>-207</b> |
| <i>of which</i>     |               |             |            |              |             |
| OPEC                | 5,810         | 261         | 24         | 5,544        | 5           |
| non-OPEC            | 4,459         | -69         | -62        | 4,266        | -212        |
| heavy crude         | 4,176         | 0           | 100        | 3,933        | 116         |
| medium crude        | 4,030         | -89         | 64         | 3,991        | 109         |
| light crude         | 2,063         | 281         | -202       | 1,887        | -432        |
| NAFTA               | 3,125         | -35         | -224       | 3,078        | -249        |
| South America       | 1,909         | 1           | 40         | 1,735        | 37          |
| Africa              | 2,329         | 278         | -236       | 2,189        | -255        |
| Asia-Pacific        | 163           | 79          | 77         | 103          | 16          |
| FSU                 | 253           | -84         | 96         | 191          | 14          |
| Middle East         | 2,433         | -56         | 215        | 2,421        | 311         |
| Europe              | 56            | 10          | -5         | 93           | -80         |

Figure 29: y/y change in crude imports (thousand b/d)



# US crude oil imports

Figure 30: Crude imports by type, August 2008

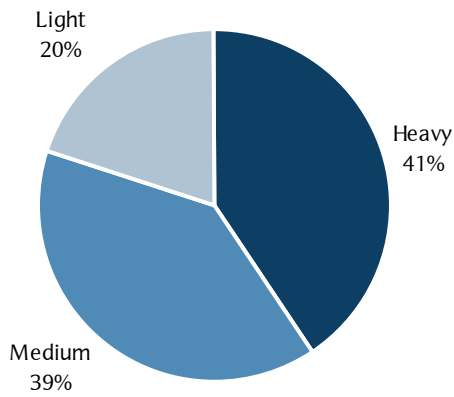


Figure 31: US imports by region, August 2008

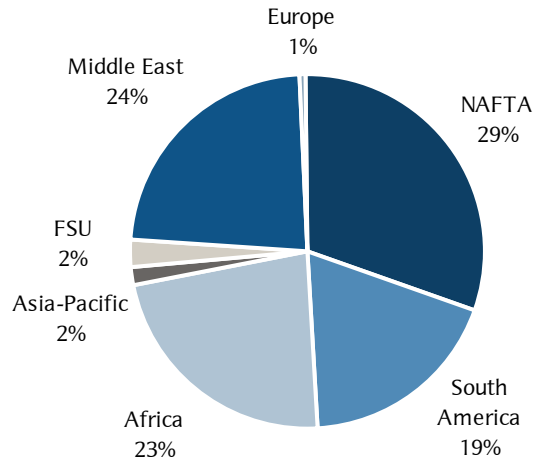


Figure 32: Source of heavy crude oil imports into US, August 2008

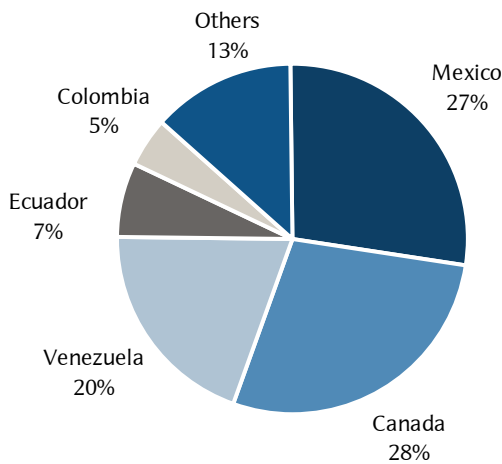


Figure 33: Source of heavy crude used in Gulf Coast refineries, August 2008

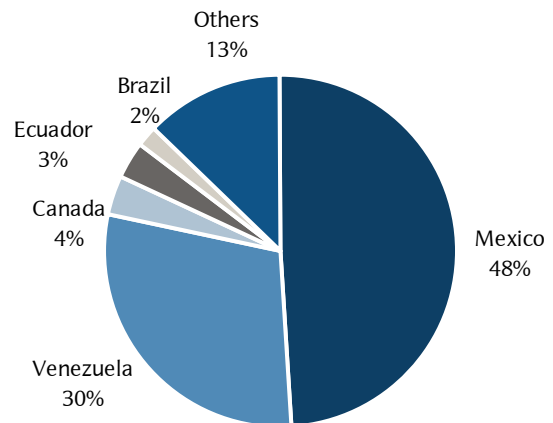


Figure 34: Source of medium imports, August 2008

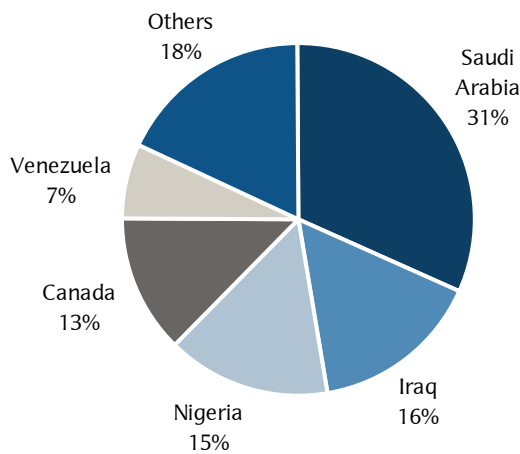
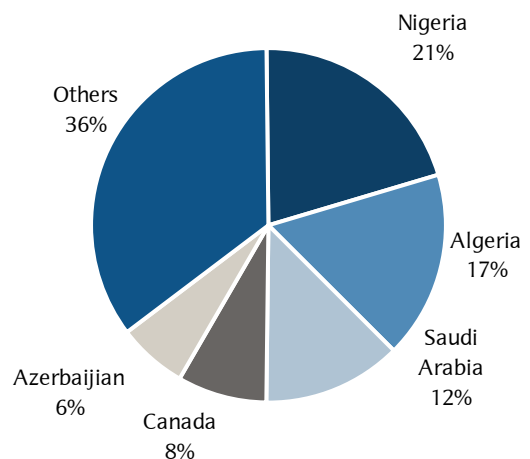


Figure 35: Source of light imports, August 2008



# United Kingdom

UK oil liquids output fell to a 30-year low in August, reaching just 1.167 mb/d. That represents a y/y fall of 133 thousand b/d, slightly better than the 164 thousand b/d decline recorded in August. Oil liquids output for the year-to-date is running lower y/y by 109 thousand b/d. The latest release of individual field data is for July, and shows a continuing sharp unwinding of the strong Buzzard field effect that had kept the data fairly flat through 2007. Buzzard, (which first came on stream in January 2007), produced 185 thousand b/d in July. That is more than the next three largest producing fields combined, but the y/y increase from Buzzard has now slowed to just 10 thousand b/d. UK oil demand was dramatically weak in August, falling to its lowest level since June 2002, with inland deliveries down y/y by 176 thousand b/d, (10.2%). Gasoline demand was lower y/y by 9.1%, and diesel demand was lower y/y by 10.4%.

Figure 37: Oil output and 12-month average (mb/d)

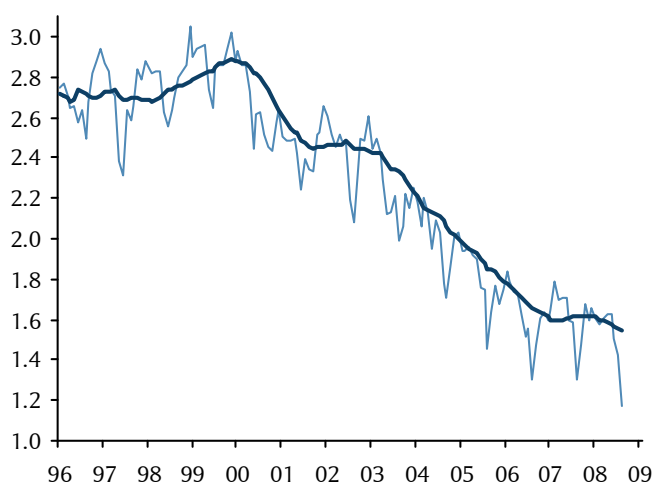


Figure 39: y/y change in oil output (thousand b/d)

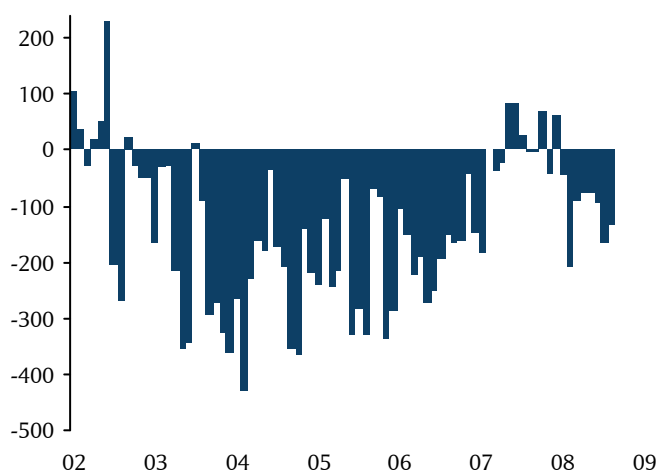


Figure 36: UK oil production (thousand b/d)

|              | Crude | NGLs | Total |
|--------------|-------|------|-------|
| 2005         | 1,600 | 186  | 1,786 |
| 2006         | 1,444 | 170  | 1,615 |
| 07Q2         | 1,509 | 161  | 1,670 |
| 07Q3         | 1,334 | 118  | 1,452 |
| 07Q4         | 1,466 | 180  | 1,646 |
| 2007         | 1,459 | 160  | 1,618 |
| Feb          | 1,404 | 175  | 1,579 |
| Mar          | 1,412 | 192  | 1,604 |
| 08Q1         | 1,412 | 186  | 1,597 |
| Apr          | 1,454 | 177  | 1,631 |
| May          | 1,454 | 175  | 1,629 |
| Jun          | 1,322 | 181  | 1,503 |
| 08Q2         | 1,410 | 178  | 1,588 |
| Jul          | 1,268 | 151  | 1,420 |
| Aug          | 1,073 | 95   | 1,167 |
| y/y change   | -123  | -10  | -133  |
| 2008 to date | 1,350 | 167  | 1,517 |
| y/y change   | -119  | 10   | -109  |

Figure 38: The 40 largest UK oil fields by 12-month rolling average crude output (thousand b/d)

| Field          | Jul 08 | m/m change | y/y change | 12 month average |
|----------------|--------|------------|------------|------------------|
| Buzzard        | 185    | -3         | 10         | 187              |
| Forties        | 65     | 0          | 7          | 57               |
| Elgin          | 61     | 1          | 7          | 49               |
| Foinaven       | 42     | -6         | -16        | 48               |
| Schiehallion   | 0      | 0          | -41        | 47               |
| Captain        | 42     | -7         | -12        | 47               |
| Clair          | 54     | 2          | 30         | 41               |
| Alba           | 38     | 6          | -10        | 37               |
| Franklin       | 39     | 0          | 0          | 35               |
| Donan (Maersk) | 19     | -2         | -28        | 31               |
| Nelson         | 24     | -4         | -11        | 30               |
| Wytch Farm     | 23     | 0          | -3         | 23               |
| Ninian         | 22     | -1         | 1          | 22               |
| Magnus         | 30     | 0          | 10         | 22               |
| Mungo          | 6      | -14        | -3         | 19               |
| Scott          | 11     | -4         | -10        | 19               |
| Brenda         | 18     | 3          | 8          | 18               |
| Claymore       | 14     | 8          | -7         | 17               |
| Harding        | 18     | 14         | -3         | 17               |
| Bittern        | 19     | 4          | -10        | 17               |
| Blake          | 4      | -5         | -18        | 16               |
| Nevis          | 18     | -3         | -1         | 16               |
| Tweedsmuir     | 16     | 2          | 6          | 14               |
| Judy           | 6      | -6         | 6          | 13               |
| Otter          | 11     | -4         | 1          | 13               |
| Pierce         | 8      | 1          | -7         | 13               |
| Beryl          | 13     | 1          | -2         | 13               |
| Blane          | 11     | -1         | 11         | 12               |
| Farragon       | 12     | 0          | -2         | 12               |
| Broom          | n.a    | n.a        | n.a        | 12               |
| Goosander      | 11     | 0          | -1         | 11               |
| Gryphon        | 8      | 1          | -4         | 11               |
| Goldeneye      | 10     | 1          | -3         | 11               |
| West Brae      | 8      | -3         | -4         | 11               |
| Comorant N     | 9      | -1         | -1         | 10               |
| Lennox         | 7      | -2         | -5         | 10               |
| Statfjord      | 10     | 0          | -2         | 10               |
| Andrew         | 15     | 2          | 1          | 10               |
| Glenelg        | 13     | 0          | 6          | 9                |
| Tern           | 5      | -2         | -4         | 8                |

# United Kingdom

Figure 40: Oil demand and 12-month average (mb/d)

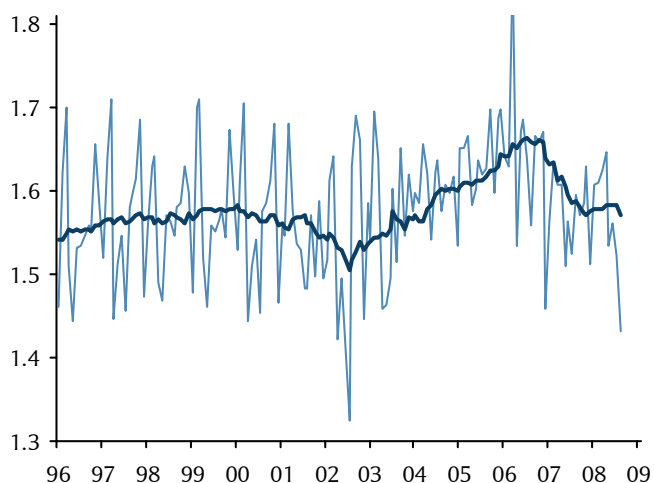


Figure 41: UK inland deliveries (thousand b/d)

|              | Aug 08       | change from |             | 2008         | ch from    |
|--------------|--------------|-------------|-------------|--------------|------------|
|              |              | Jul 08      | Aug 07      | to date      | 2007       |
| Gasoline     | 375          | 5           | -38         | 387          | -25        |
| Diesel       | 397          | -6          | -46         | 429          | -3         |
| Jet fuel     | 287          | -26         | -34         | 272          | -3         |
| Gasoil       | 107          | -4          | -13         | 118          | -4         |
| Naphtha      | 26           | 10          | 0           | 24           | 3          |
| LPG          | 88           | -29         | 0           | 115          | 20         |
| Kerosene     | 145          | -3          | -21         | 190          | -4         |
| Fuel oil     | 28           | -6          | -10         | 36           | -2         |
| Bitumen      | 32           | -1          | -2          | 31           | 4          |
| Lubes        | 9            | -1          | -2          | 10           | -3         |
| Other        | 45           | -33         | -10         | 72           | 5          |
| <b>Total</b> | <b>1,432</b> | <b>-94</b>  | <b>-176</b> | <b>1,567</b> | <b>-12</b> |

Figure 42: Gasoline use and 12-month average (mb/d)

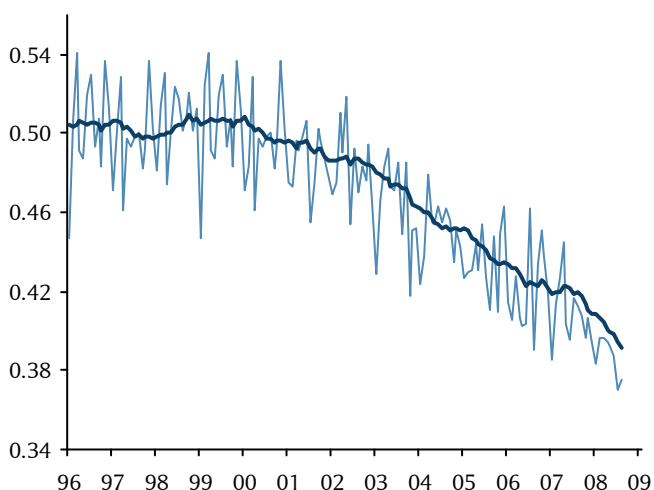


Figure 43: Diesel use and 12-month average (mb/d)

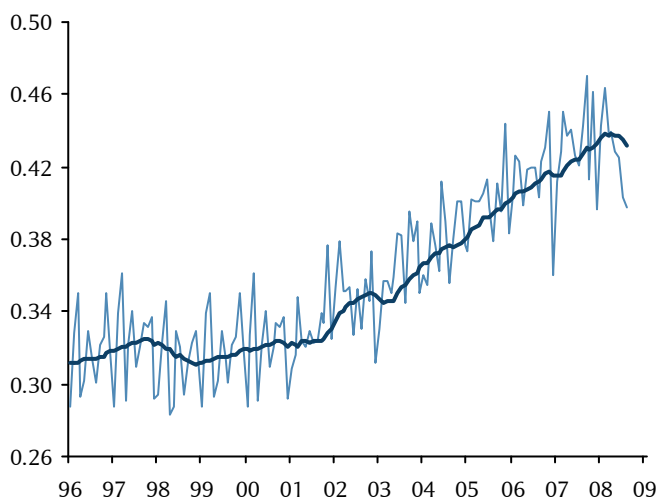
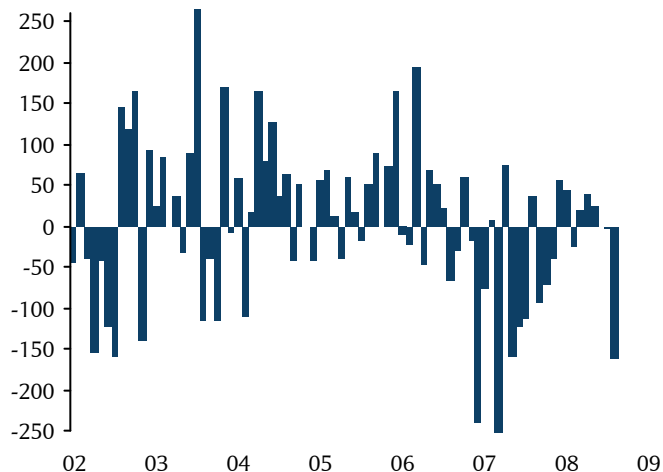


Figure 44: Refinery output (thousand tonnes)

|                         | Aug 08       | change from |             | 2008          | ch from     |
|-------------------------|--------------|-------------|-------------|---------------|-------------|
|                         |              | Jul 08      | Aug 07      | to date       | 2007        |
| LPG                     | 229          | -5          | 2           | 210           | 3           |
| Naphtha                 | 192          | 101         | -38         | 179           | -28         |
| Motor Spirit            | 1,793        | 21          | -97         | 1,693         | -109        |
| Jet fuel                | 771          | 35          | 92          | 564           | 34          |
| Burning oil             | 126          | 7           | -46         | 239           | 6           |
| Gasoil/diesel           | 2,308        | -46         | -72         | 2,173         | -44         |
| Fuel oil                | 866          | 151         | 22          | 923           | 66          |
| Lubricants              | 37           | -12         | -31         | 45            | -6          |
| Bitumen                 | 156          | 22          | -3          | 127           | -9          |
| Other                   | 25           | -6          | -16         | 29            | -19         |
| <b>Total output</b>     | <b>6,661</b> | <b>264</b>  | <b>-229</b> | <b>6,289</b>  | <b>-160</b> |
| <b>Total throughput</b> | <b>7,061</b> | <b>315</b>  | <b>-252</b> | <b>53,446</b> | <b>-859</b> |

Figure 45: y/y in total inland deliveries (thousand b/d)



# Mexico

Delays caused by hurricanes resulted in a sharp fall in Mexican crude oil exports in September. Exports fell to just 1.06 mb/d, a y/y fall of 619 thousand b/d. Total oil output was 3.08 mb/d, representing a fairly calamitous y/y fall of 452 thousand b/d. It is a measure of the scale of the weakness in Mexican output that this is only the second largest y/y decline of the year so far, and is the fourth decline this year of more than 0.4 mb/d. Lower prices and lower exports took a heavy toll on revenues, with the net oil surplus deteriorating from \$3.27bn in August to \$1.45bn in September, which is the lowest level or surplus since February 2005. Mexican oil demand was higher y/y in September by 2.8%, slightly stronger than the 2% increase seen for 2008-to-date. Gasoline and diesel demand were particularly strong, with the former up y/y by 7.6% and the latter up y/y by 10.3%.

Figure 47: Oil output and 12-month average (mb/d)

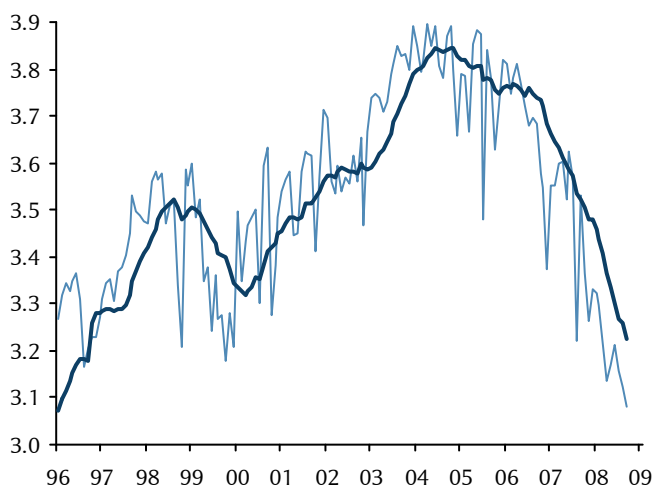


Figure 49: Crude oil exports (mb/d)

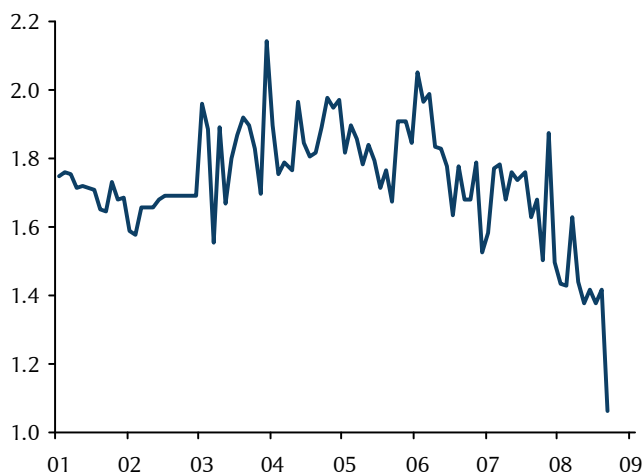


Figure 46: Oil production (thousand b/d)

|              | Crude | NGLs | Total |
|--------------|-------|------|-------|
| 2005         | 3,334 | 426  | 3,760 |
| 2006         | 3,256 | 427  | 3,683 |
| 07Q3         | 3,056 | 384  | 3,439 |
| 07Q4         | 2,951 | 371  | 3,322 |
| 2007         | 3,082 | 396  | 3,477 |
| Mar          | 2,847 | 367  | 3,215 |
| 08Q1         | 2,911 | 367  | 3,278 |
| Apr          | 2,767 | 370  | 3,137 |
| May          | 2,798 | 371  | 3,169 |
| Jun          | 2,839 | 372  | 3,212 |
| 08Q2         | 2,801 | 371  | 3,173 |
| Jul          | 2,782 | 374  | 3,157 |
| Aug          | 2,759 | 363  | 3,122 |
| Sep          | 2,722 | 357  | 3,080 |
| y/y change   | -439  | -15  | -452  |
| 08Q3         | 2,755 | 365  | 3,120 |
| 2008 to date | 2,822 | 368  | 3,190 |
| y/y change   | -304  | -36  | -340  |

Figure 48: y/y change in oil output (thousand b/d)

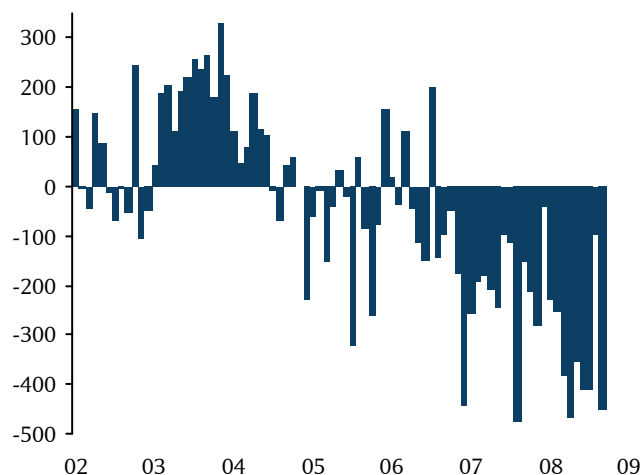


Figure 50: Inland deliveries (thousand b/d)

|                  | Sep 08 | change from Aug 08 | 2008 to date | 2008 to date | ch from 2007 |
|------------------|--------|--------------------|--------------|--------------|--------------|
| Gasoline         | 788    | 7                  | 55           | 788          | 39           |
| Diesel           | 380    | -6                 | 35           | 384          | 29           |
| Jet fuel         | 56     | -8                 | -7           | 68           | -1           |
| LPG              | 279    | 9                  | -7           | 286          | -8           |
| Fuel oil         | 158    | -95                | -52          | 241          | -27          |
| Asphalt          | 35     | -1                 | 9            | 32           | 2            |
| Other            | 42     | 4                  | 15           | 44           | 2            |
| Total oil        | 1,738  | -91                | 48           | 1,843        | 36           |
| Nat gas (mmcf/d) | 2,847  | -101               | -78          | 3,112        | 100          |

# Mexico

Figure 51: Oil, gas and petrochemical trade balances (\$ million)

|            | EXPORTS |          |                 |               | IMPORTS  |                 |     | Balance | Oil Balance |               |
|------------|---------|----------|-----------------|---------------|----------|-----------------|-----|---------|-------------|---------------|
|            | Crude   | Products | Petro-chemicals | Total exports | Products | Petro-chemicals | Gas |         |             | Total imports |
| 2005       | 28,329  | 2,992    | 303             | 31,703        | 7,859    | 499             | 499 | 9,364   | 22,339      | 23,462        |
| 2006       | 34,707  | 3,595    | 299             | 38,672        | 10,029   | 403             | 403 | 11,292  | 27,381      | 28,273        |
| 07Q3       | 10,105  | 1,064    | 67              | 11,305        | 3,949    | 0               | 0   | 4,216   | 7,089       | 7,220         |
| 07Q4       | 11,525  | 1,099    | 51              | 12,730        | 5,120    | 0               | 0   | 5,475   | 7,254       | 7,505         |
| 2007       | 37,932  | 4,059    | 242             | 42,584        | 15,798   | 0               | 0   | 16,938  | 25,645      | 26,194        |
| Mar        | 4,510   | 511      | 34              | 5,067         | 1,945    | 24              | 145 | 2,114   | 2,953       | 3,076         |
| 08Q1       | 11,447  | 1,339    | 72              | 12,878        | 5,002    | 0               | 0   | 5,534   | 7,345       | 7,783         |
| Apr        | 4,096   | 597      | 40              | 4,735         | 1,385    | 16              | 125 | 1,526   | 3,209       | 3,309         |
| May        | 4,444   | 502      | 37              | 5,016         | 2,011    | 9               | 128 | 2,147   | 2,869       | 2,935         |
| Jun        | 4,846   | 577      | 37              | 5,492         | 2,955    | 18              | 160 | 3,133   | 2,359       | 2,469         |
| 08Q2       | 13,387  | 1,677    | 115             | 15,244        | 6,350    | 0               | 0   | 6,806   | 8,438       | 8,713         |
| Jul        | 5,131   | 626      | 39              | 5,836         | 2,801    | 11              | 151 | 2,963   | 2,872       | 2,956         |
| Aug        | 4,761   | 636      | 37              | 5,470         | 2,125    | 13              | 101 | 2,239   | 3,231       | 3,272         |
| Sep        | 2,944   | 487      | 50              | 3,524         | 1,979    | 9               | 66  | 2,054   | 1,469       | 1,452         |
| y/y change | -455    | 81       | 20              | -322          | 743      | 1               | -17 | 726     | -1,048      | -1,117        |
| 08Q3       | 12,836  | 1,750    | 126             | 14,829        | 6,905    | 0               | 0   | 7,257   | 7,572       | 7,680         |

Figure 52: Monthly oil trade surplus (\$ billion)

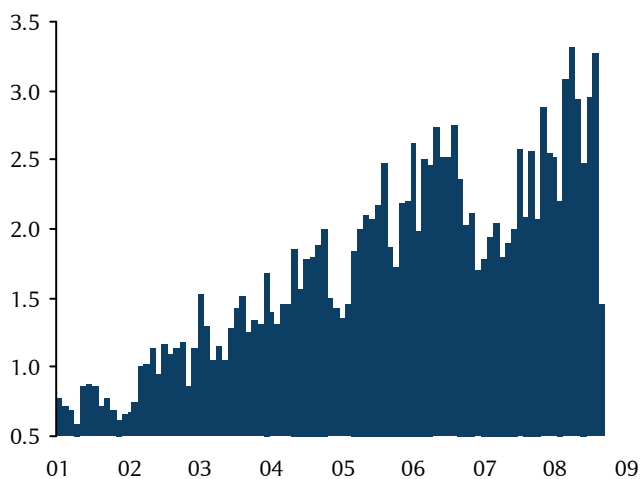


Figure 53: Monthly net oil product imports (\$ million)

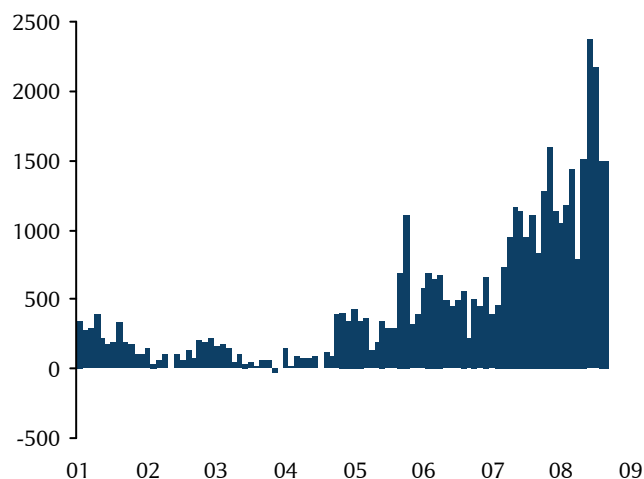


Figure 54: Average price of Maya crude exports (\$/b)

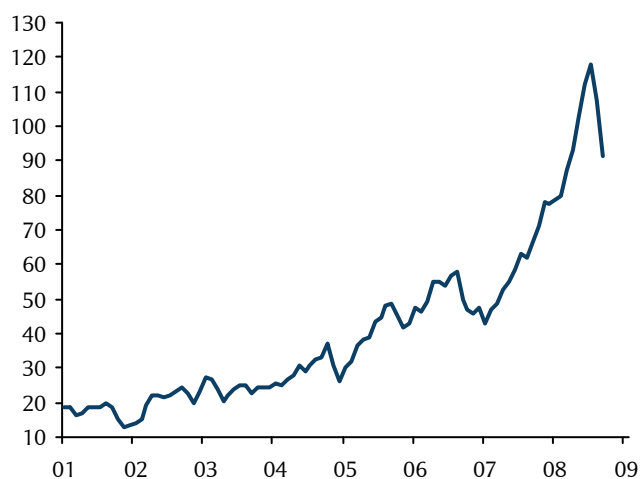
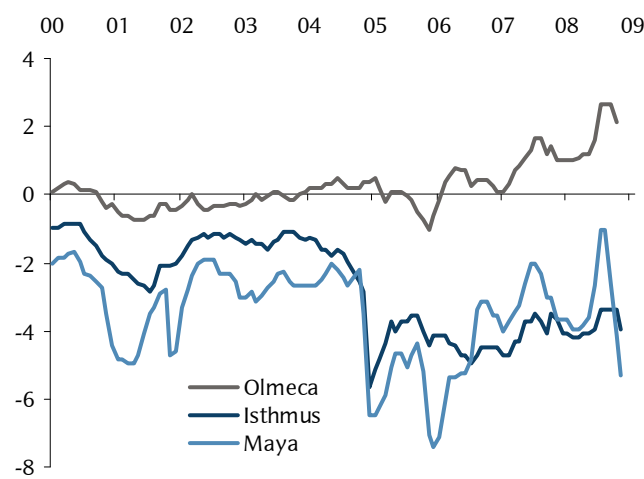


Figure 55: Discounts from US formulae (\$/b)



## International rig counts

Falls in oil prices and the deterioration in credit markets have yet to make much of an impact yet on international oil rig counts. In the latest Baker Hughes data, which shows conditions in September, the international oil rig count advanced by 14 rigs to now stand at 831 rigs. That is just a single rig shy of the all-time record high in the Baker-Hughes data, and represents a y/y increase of 45 rigs. The m/m increase came primarily from OPEC producers, where the count advanced by 13 rigs to 249 rigs. However, oil drilling activity is lower by five rigs y/y in OPEC members, while the non-OPEC rig count is higher y/y by 50 rigs. Within that total, the largest y/y gains have come from Brazil (higher by 22 rigs) and Egypt (higher by 17 rigs). The international gas rig count rose m/m by six rigs to 250 rigs, a new all-time high for activity.

Figure 57: International oil rig count

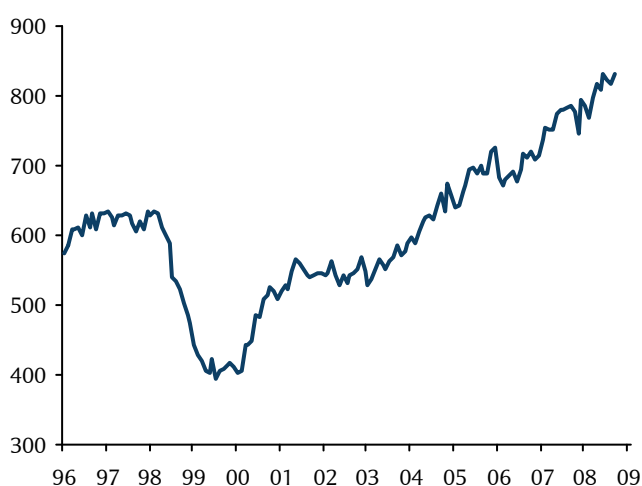


Figure 58: International gas rig count

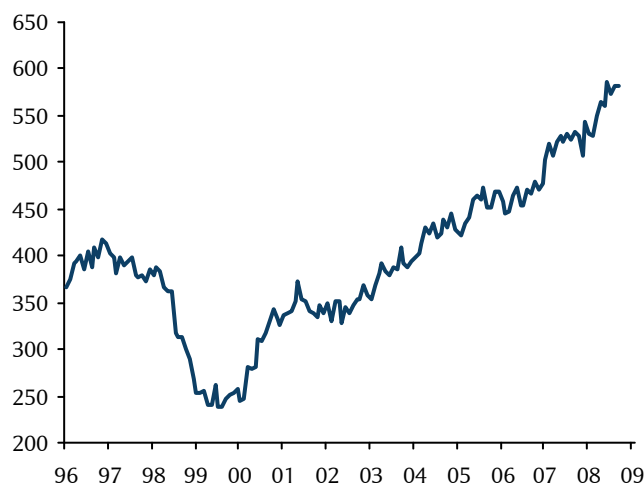


Figure 56: International drilling activity (rigs)

| Oil rig counts        | Sep 08     | change since Aug 08 | change since Sep 07 |
|-----------------------|------------|---------------------|---------------------|
| <b>Total</b>          | <b>831</b> | <b>14</b>           | <b>45</b>           |
| Africa                | 63         | 3                   | -10                 |
| Asia Pacific          | 175        | -2                  | -15                 |
| Europe                | 62         | 0                   | 21                  |
| Latin America         | 322        | 13                  | 25                  |
| Middle East           | 209        | 0                   | 24                  |
| Mexico                | 72         | -2                  | -4                  |
| Venezuela             | 69         | 6                   | 6                   |
| India                 | 65         | -1                  | -6                  |
| Argentina             | 62         | 1                   | -4                  |
| Brazil                | 54         | 5                   | 22                  |
| Saudi Arabia          | 50         | 1                   | -1                  |
| Oman                  | 44         | 0                   | 8                   |
| Colombia              | 41         | 1                   | 0                   |
| Egypt                 | 40         | -1                  | 17                  |
| Indonesia             | 40         | 0                   | 0                   |
| Algeria               | 22         | 0                   | -8                  |
| Norway                | 21         | 4                   | 7                   |
| Syria                 | 20         | 0                   | 1                   |
| China (offshore)      | 17         | -3                  | -2                  |
| Yemen                 | 15         | 0                   | -1                  |
| Libya                 | 15         | 1                   | 1                   |
| Australia             | 15         | 2                   | -4                  |
| UK                    | 14         | -5                  | -3                  |
| Ecuador               | 14         | 2                   | 3                   |
| Romania               | 13         | 0                   | 12                  |
| Others                | 128        | 3                   | 1                   |
| <b>Gas rig counts</b> |            |                     |                     |
| <b>Total</b>          | <b>250</b> | <b>6</b>            | <b>20</b>           |
| Africa                | 4          | 3                   | 4                   |
| Asia Pacific          | 61         | -3                  | 11                  |
| Europe                | 30         | 0                   | 0                   |
| Latin America         | 73         | 4                   | 11                  |
| Middle East           | 82         | 2                   | -6                  |

Note : The Baker-Hughes International counts exclude the USA and Canada, and no longer reports data for Iran

Figure 59: Non-OPEC oil rig count



# International rig counts

Figure 60: Venezuelan oil rig count



Figure 61: Mexican oil rig count

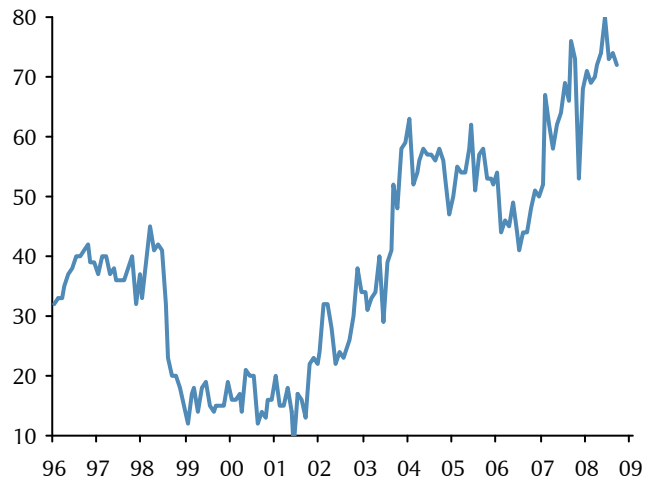


Figure 62: Argentinean oil rig count

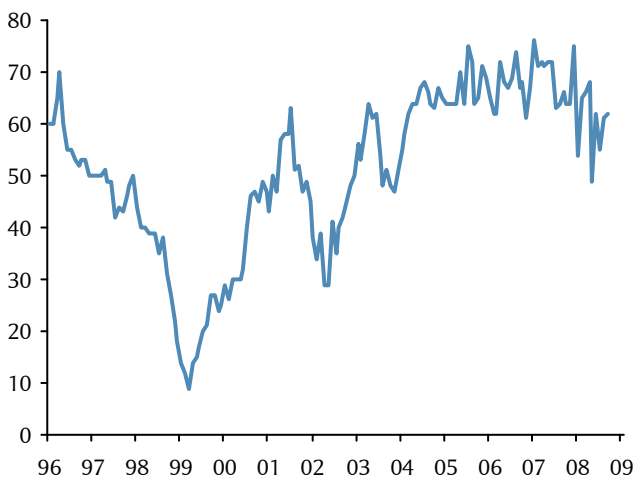


Figure 63: Indian oil rig count

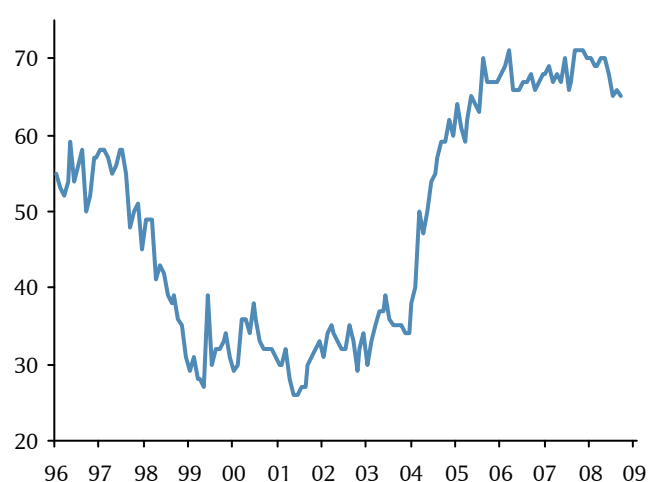


Figure 64: Indonesian oil rig count

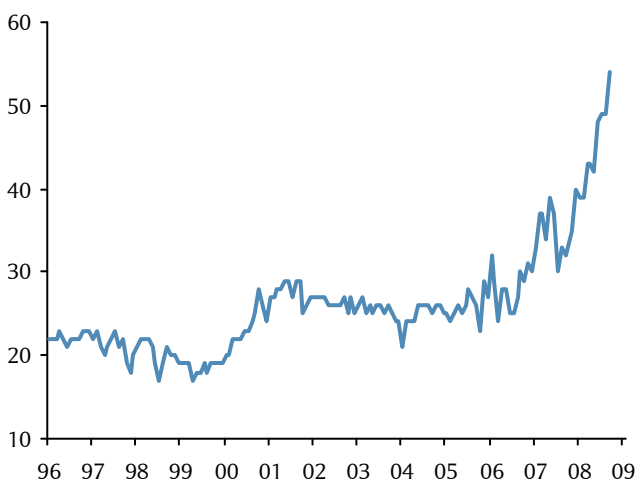
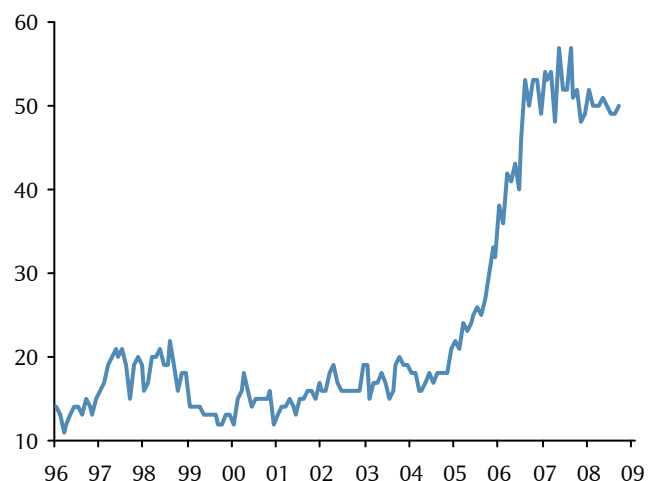


Figure 65: Saudi Arabian oil rig count



# Japan

Japanese oil demand fell very heavily in September, with inland deliveries falling by 504 thousand b/d y/y. That is the weakest month for demand since the sharp fall created by very mild weather in January 2007. Much of the deepness of the latest weakness was caused by the impact of nuclear outages on oil demand turning negative y/y. Direct crude oil burn and fuel oil demand moved lower y/y by a combined 194 thousand b/d, having been a very strong positive effect in previous months. Gasoline demand was also particularly weak, moving lower y/y by 8.8%. Inventories have continued to rise, almost completely removing the large deficits that have characterised much of the year. Total inventories are now only 2.9 mb below their five-year average. Imports were higher y/y by 463 thousand b/d, with Iran and Kuwait accounting for most of that increase.

Figure 66: Source of crude imports (thousand b/d)

|              | Sep 08 | change from Aug 08 | change from Sep 07 | 2008 to date | ch from 2007 |
|--------------|--------|--------------------|--------------------|--------------|--------------|
| UAE          | 998    | 16                 | -9                 | 1046         | 3            |
| Saudi Arabia | 977    | -38                | -36                | 1152         | 89           |
| Qatar        | 489    | 12                 | 17                 | 466          | 97           |
| Iran         | 436    | -119               | 140                | 497          | 16           |
| Kuwait       | 344    | -46                | 135                | 315          | 16           |
| Indonesia    | 143    | 33                 | -4                 | 141          | 16           |
| FSU          | 139    | 32                 | 23                 | 139          | 15           |
| Sudan        | 108    | 6                  | 57                 | 109          | 10           |
| Oman         | 102    | 0                  | 50                 | 89           | 1            |
| Iraq         | 67     | 38                 | 54                 | 44           | 4            |
| Vietnam      | 61     | -6                 | 24                 | 59           | 32           |
| Neutral Zone | 43     | -36                | -2                 | 67           | -24          |
| Australia    | 39     | -14                | -8                 | 45           | 4            |
| China        | 25     | 16                 | 25                 | 11           | 7            |
| Others       | 57     | 2                  | 0                  | 76           | -71          |
| Total        | 4029   | -102               | 463                | 4256         | 214          |

Figure 67: Source of crude imports, September 2008

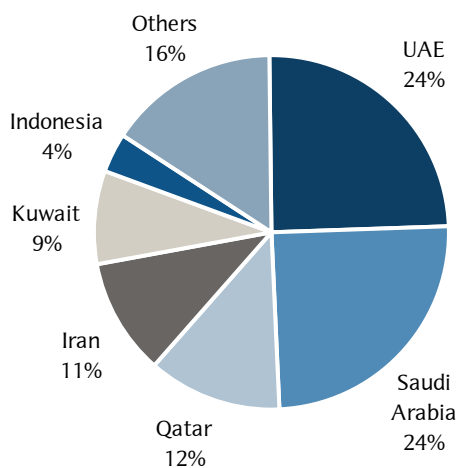


Figure 68: Imports by region, September 2008

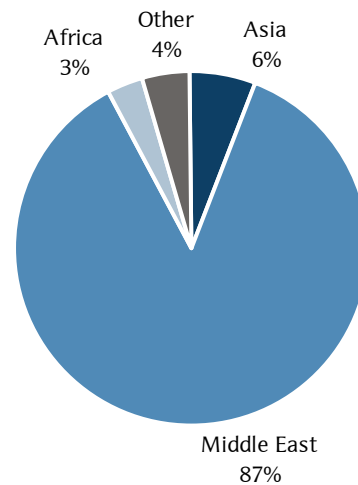


Figure 69: Crude oil imports (mb/d)

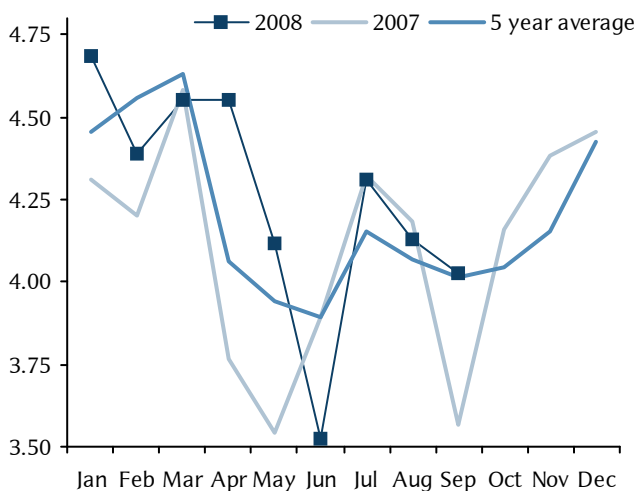
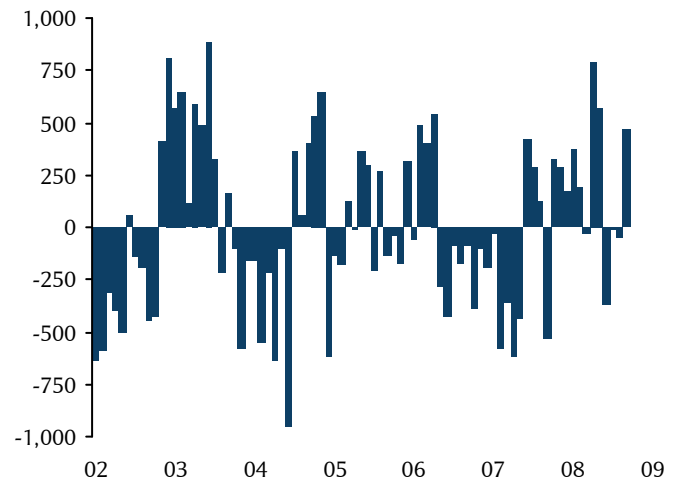


Figure 70: y/y change in imports (thousand b/d)



# Japan

Figure 71: Inland deliveries (thousand b/d)

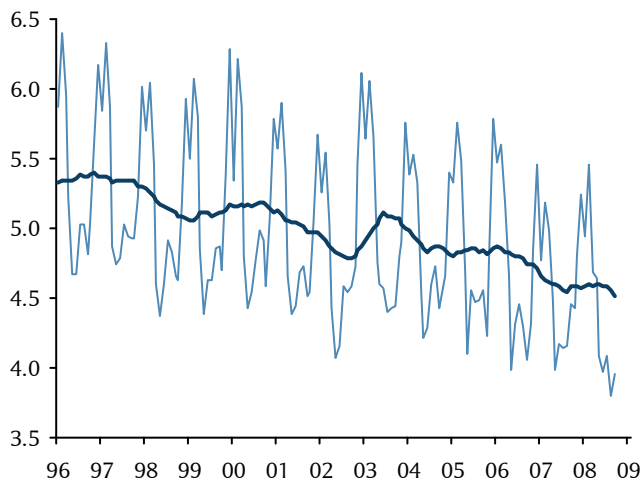


Figure 72: Inland deliveries (thousand b/d)

|                   | Sep 08       | change from |             | 2008         | ch from    |
|-------------------|--------------|-------------|-------------|--------------|------------|
|                   |              | Aug 08      | Sep 07      | to date      | 2007       |
| Gasoline          | 1,000        | 49          | -96         | 980          | -54        |
| Naphtha           | 727          | -62         | -97         | 794          | -49        |
| Jet fuel          | 98           | -4          | -6          | 99           | 2          |
| Kerosene          | 140          | 57          | -85         | 334          | -31        |
| Gasoil            | 610          | 114         | -32         | 587          | -27        |
| Fuel oil 'A'      | 275          | 53          | -66         | 333          | -37        |
| Other fuel oil    | 407          | -29         | -57         | 443          | 51         |
| Asphalt and lubes | 95           | 26          | -1          | 87           | -4         |
| Direct crude use  | 164          | -39         | -74         | 233          | 75         |
| LPG               | 442          | -7          | 9           | 509          | -6         |
| <b>Total</b>      | <b>3,958</b> | <b>158</b>  | <b>-504</b> | <b>4,398</b> | <b>-80</b> |

Figure 73: y/y change in oil demand (thousand b/d)

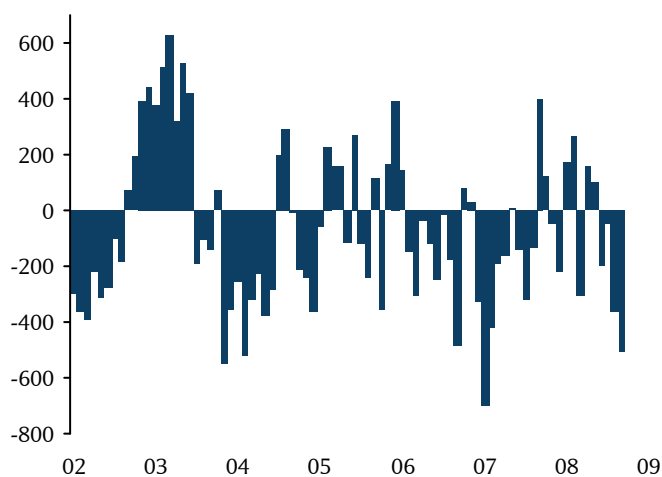


Figure 74: Gasoline demand (mb/d)

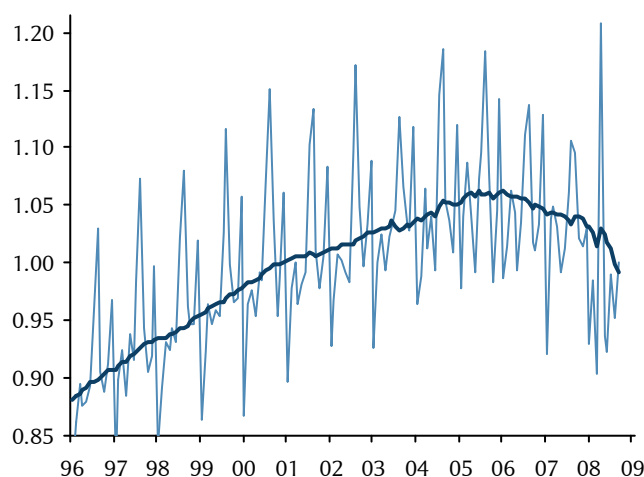


Figure 75: Kerosene demand (mb/d)

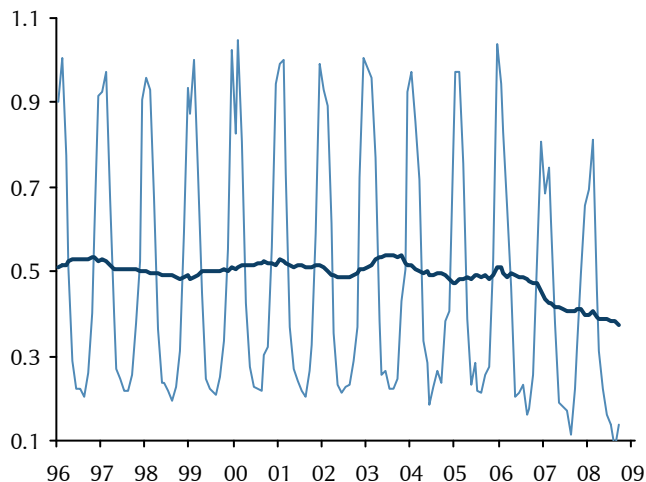
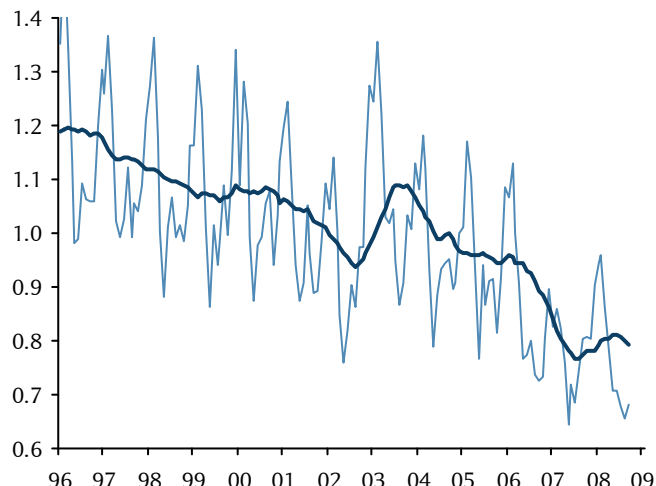


Figure 76: Total fuel oil demand (mb/d)



# Japan

Figure 77: Total oil inventories (mb)

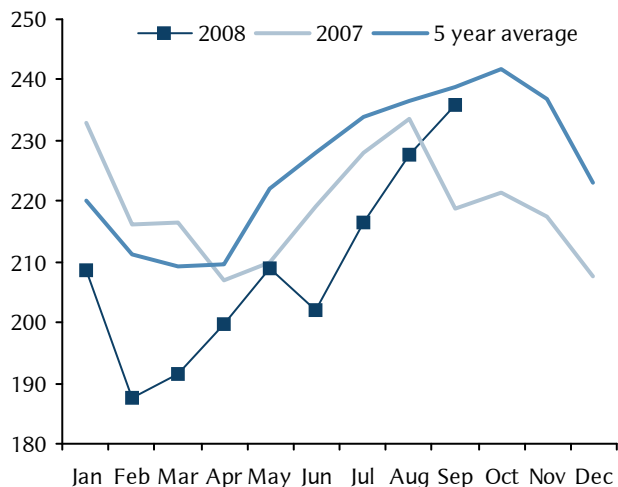


Figure 78: Oil inventories (mb)

|                         | Sep 08       | change from Aug 08 | ch from Sep 07 | ch from 5 yr av. |
|-------------------------|--------------|--------------------|----------------|------------------|
| Gasoline                | 12.9         | -1.5               | 1.7            | 0.3              |
| Naphtha                 | 13.8         | 1.9                | 1.8            | 1.6              |
| Kerosene                | 24.2         | 3.0                | -2.1           | -4.6             |
| Gasoil                  | 13.5         | -1.6               | 2.9            | 2.7              |
| Fuel oil                | 21.3         | -0.1               | 0.9            | 1.1              |
| LPG                     | 33.0         | 0.8                | 1.0            | -0.5             |
| Other                   | 9.9          | -1.3               | 0.5            | 0.8              |
| <b>Total products</b>   | <b>128.5</b> | <b>1.3</b>         | <b>6.7</b>     | <b>1.3</b>       |
| Crude oil               | 107.4        | 7.1                | 10.6           | -4.2             |
| <b>Crude + products</b> | <b>235.9</b> | <b>8.4</b>         | <b>17.3</b>    | <b>-2.9</b>      |

Figure 79: Crude oil inventories (mb)

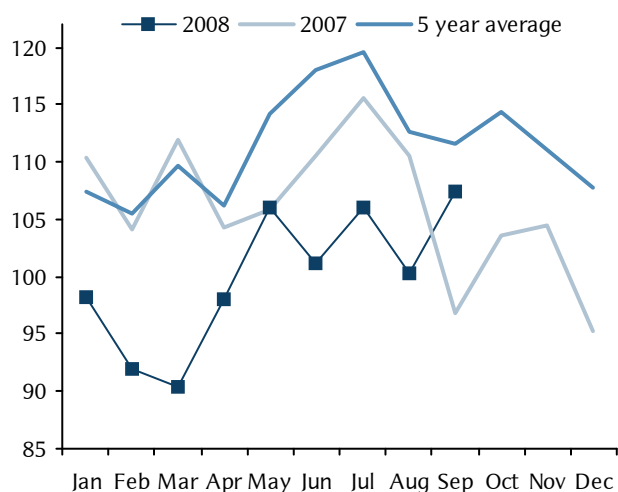


Figure 80: Oil product inventories (mb)

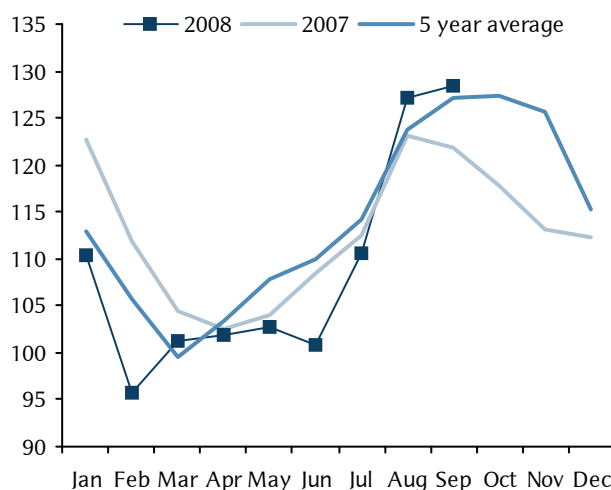


Figure 81: Kerosene inventories (mb)

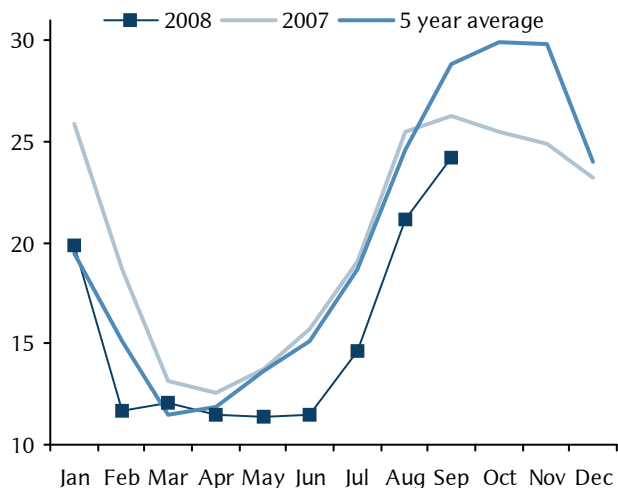
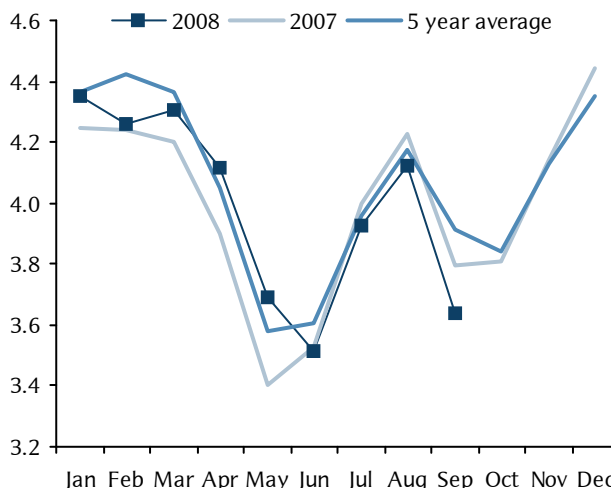


Figure 82: Crude runs through refineries (mb/d)



# Norway

The latest set of Norwegian Petroleum Directorate monthly data places Norwegian output in August at 2.306 mb/d. That represents a m/m decline of 297 thousand b/d, and y/y decline of 101 thousand b/d. The year-to-date decline now stands at 117 thousand b/d, with slight increases in condensate and NGLs output not compensating for a 134 thousand b/d fall in crude oil output. A gas leak reduced Kvitebjørn output sharply in August, (and then kept the field off stream throughout the course of September), while seasonal maintenance took a heavy toll of output from Troll and Snorre in particular. The preliminary Norwegian Petroleum Directorate data for September indicates the lowest production level of the year for total oil liquids output at 2.185 mb/d, which would be a y/y reduction of 225 thousand b/d.

Figure 84: Output and 12-month average (mb/d)

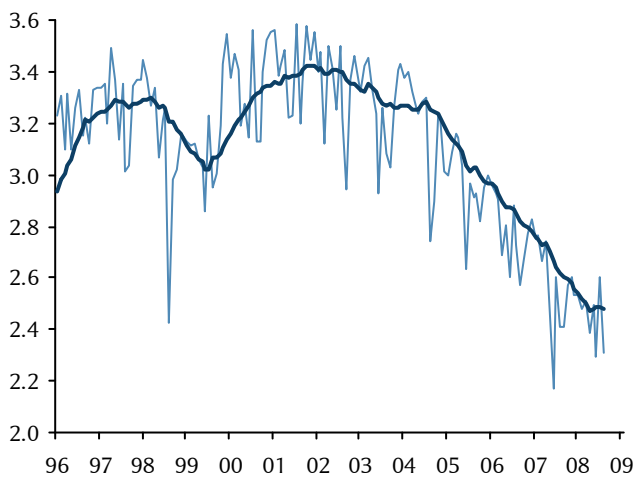


Figure 86: y/y change in oil output (thousand b/d)

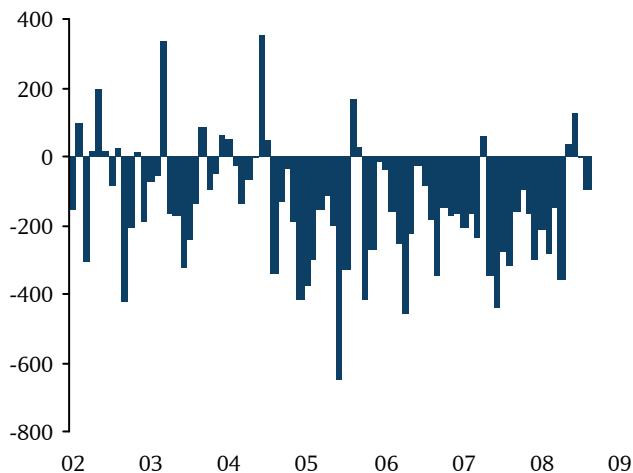


Figure 83: Oil production (thousand b/d)

|              | Crude | NGLs | Condensate | Total |
|--------------|-------|------|------------|-------|
| 2005         | 2,553 | 271  | 145        | 2,969 |
| 2006         | 2,354 | 287  | 138        | 2,779 |
| 07Q2         | 2,122 | 281  | 55         | 2,458 |
| 07Q3         | 2,163 | 257  | 56         | 2,475 |
| 07Q4         | 2,193 | 305  | 71         | 2,569 |
| 2007         | 2,211 | 286  | 60         | 2,556 |
| Feb          | 2,104 | 295  | 81         | 2,480 |
| Mar          | 2,140 | 305  | 69         | 2,514 |
| 08Q1         | 2,135 | 301  | 73         | 2,509 |
| Apr          | 2,032 | 278  | 77         | 2,387 |
| May          | 2,123 | 304  | 70         | 2,497 |
| Jun          | 1,962 | 271  | 61         | 2,293 |
| 08Q2         | 2,040 | 285  | 69         | 2,394 |
| Jul          | 2,227 | 301  | 75         | 2,603 |
| Aug          | 1,993 | 250  | 63         | 2,306 |
| y/y change   | -84   | -20  | 4          | -101  |
| 2008 to date | 2,093 | 288  | 71         | 2,452 |
| y/y change   | -134  | 2    | 15         | -117  |

Figure 85: Production by field (thousand b/d)

| Field          | Aug 08 | 1 month change | 2008 to date | change from 2007 |
|----------------|--------|----------------|--------------|------------------|
| Alvheim        | 73     | 13             | 22           | 22               |
| Asgard         | 178    | -8             | 178          | -22              |
| Balder         | 65     | -5             | 78           | -20              |
| Brage          | 33     | 2              | 28           | 6                |
| Draugen        | 81     | -2             | 72           | -3               |
| Ekofisk        | 220    | 2              | 217          | -17              |
| Eldfisk        | 56     | -3             | 55           | 5                |
| Fram           | 31     | -32            | 53           | 10               |
| Gimle          | 10     | -3             | 11           | 1                |
| Glitne         | 7      | -3             | 9            | 1                |
| Grane          | 177    | -4             | 170          | -46              |
| Gullfaks       | 104    | -2             | 96           | -6               |
| Gullfaks Sør   | 77     | 9              | 65           | -10              |
| Gungne         | 6      | -3             | 8            | 0                |
| Gyda           | 11     | 0              | 13           | 3                |
| Heidrun        | 94     | 3              | 95           | -12              |
| Kirstin        | 116    | -7             | 119          | 28               |
| Kvitebjørn     | 15     | -49            | 49           | 31               |
| Mickell        | 29     | 0              | 24           | -6               |
| Njord          | 18     | 3              | 16           | -2               |
| Norne          | 15     | -19            | 59           | -10              |
| Oseberg        | 106    | -23            | 106          | -4               |
| Oseberg Sør    | 60     | -7             | 57           | 3                |
| Ringhorn       | 37     | 0              | 33           | 6                |
| Sigyn          | 11     | -7             | 18           | -2               |
| Sleipner       | 10     | -5             | 15           | -4               |
| Sleipner Vest  | 29     | -13            | 40           | -6               |
| Snohvit        | 21     | 9              | 10           | 9                |
| Snorre         | 130    | -43            | 156          | 16               |
| Statfjord      | 73     | -10            | 83           | -3               |
| Statfjord Øst  | 16     | 3              | 14           | -11              |
| Statfjord Nord | 17     | -1             | 15           | -5               |
| Tambar         | 11     | 0              | 12           | 1                |
| Tordis         | 21     | -1             | 31           | -15              |
| Troll          | 99     | -52            | 159          | -32              |
| Ula            | 10     | 1              | 10           | -6               |
| Urd            | 2      | -3             | 8            | -9               |
| Valhall        | 53     | -4             | 50           | -12              |
| Varg           | 10     | -2             | 11           | -4               |
| Veslefrikk     | 9      | -3             | 12           | -4               |
| Vigdis         | 28     | -35            | 55           | -9               |
| Vilje          | 15     | 15             | 2            | 2                |
| Visund         | 30     | -3             | 33           | -11              |
| Volve          | 35     | 0              | 22           | 22               |
| Others         | 59     | -5             | 66           | 12               |

# China

Chinese oil demand slowed noticeably in September, with the y/y growth rate for total oil demand registering 3.8%, which is significantly lower than the somewhat exaggerated 8% growth seen in August and the 10.6% growth seen in July. Distillate demand growth held up relatively well in September, and indeed was responsible for all of the net growth in demand. Crude oil imports rose y/y by 334 thousand b/d, slightly more than the average for the year-to-date, while refinery runs were higher y/y by 319 thousand b/d, slightly less than the average for the year-to-date. Flows from Saudi Arabia leapt by 461 thousand b/d m/m and by 387 thousand b/d y/y to stand at just under 1 mb/d, giving Saudi Arabia a 27% share in all Chinese crude imports. That surge has allowed Saudi Arabia to overtake Angola as the main supplier of crude to China for the year-to-date.

Figure 88: Output and 12-month average (mb/d)

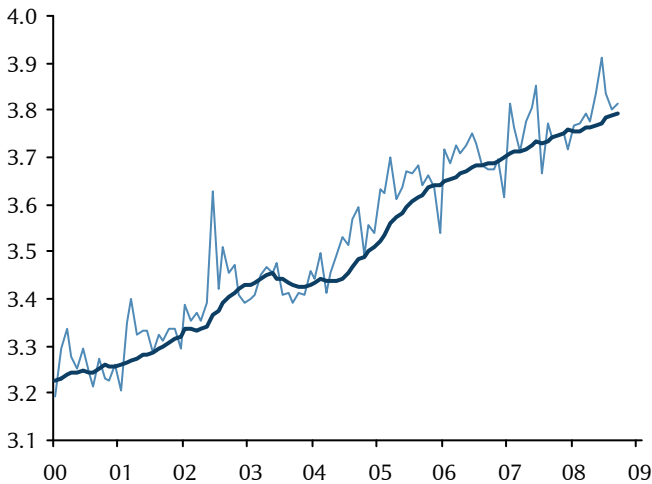


Figure 90: y/y change in refinery runs of crude oil (thousand b/d)

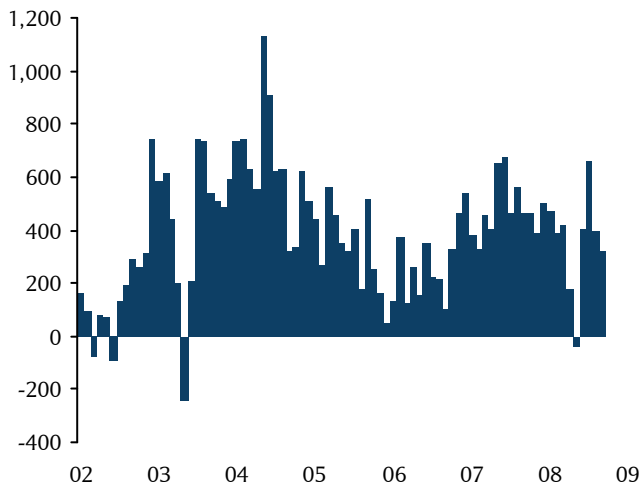


Figure 87: Oil output, imports and runs (thousand b/d)

|              | Output | Imports | Refinery runs |
|--------------|--------|---------|---------------|
| 2005         | 3,642  | 2,559   | 5,842         |
| 2006         | 3,700  | 2,965   | 6,114         |
| 07Q3         | 3,727  | 3,398   | 6,549         |
| 07Q4         | 3,738  | 3,124   | 6,738         |
| 2007         | 3,760  | 3,286   | 6,593         |
| Mar          | 3,795  | 4,101   | 6,850         |
| 08Q1         | 3,779  | 3,677   | 6,841         |
| Apr          | 3,776  | 3,489   | 6,708         |
| May          | 3,837  | 3,841   | 6,587         |
| Jun          | 3,911  | 3,569   | 7,255         |
| 08Q2         | 3,841  | 3,635   | 6,847         |
| Jul          | 3,834  | 3,269   | 7,185         |
| Aug          | 3,800  | 3,711   | 6,921         |
| Sep          | 3,814  | 3,682   | 6,921         |
| y/y change   | 72     | 334     | 319           |
| 08Q3         | 3,816  | 3,553   | 7,010         |
| 2008 to date | 3,812  | 3,622   | 6,900         |
| y/y change   | 45     | 281     | 356           |

Figure 89: y/y change in implied oil demand (thousand b/d)

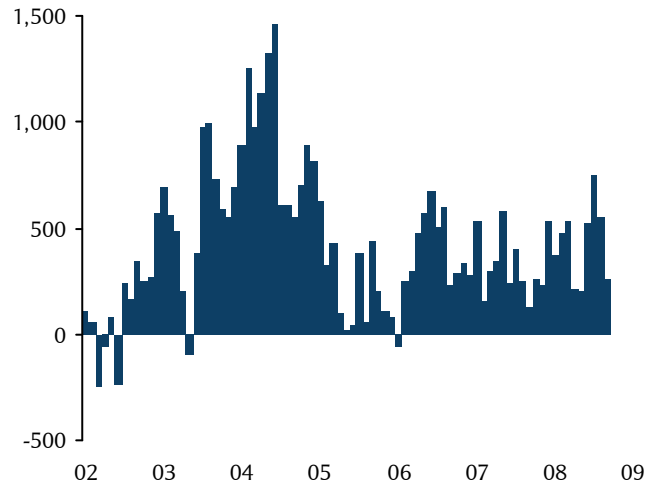
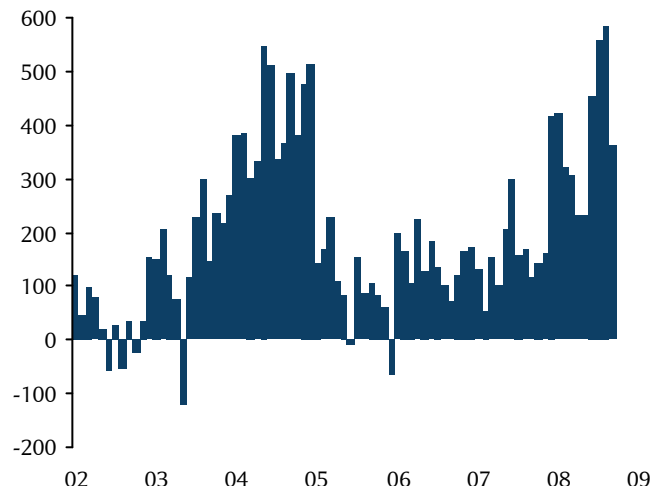


Figure 91: y/y change in implied diesel demand (thousand b/d)



# China

Figure 92: Source of crude oil imports, September 2008

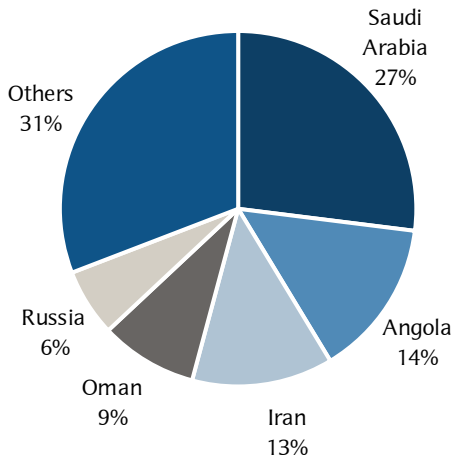


Figure 94: Crude oil imports by region, September 2008

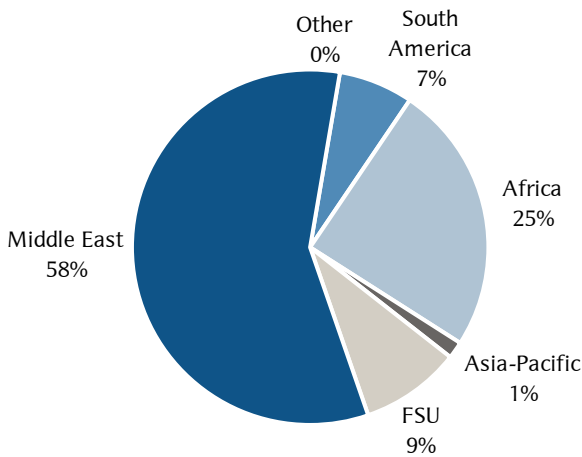


Figure 95: Imports and 12-month average (mb/d)

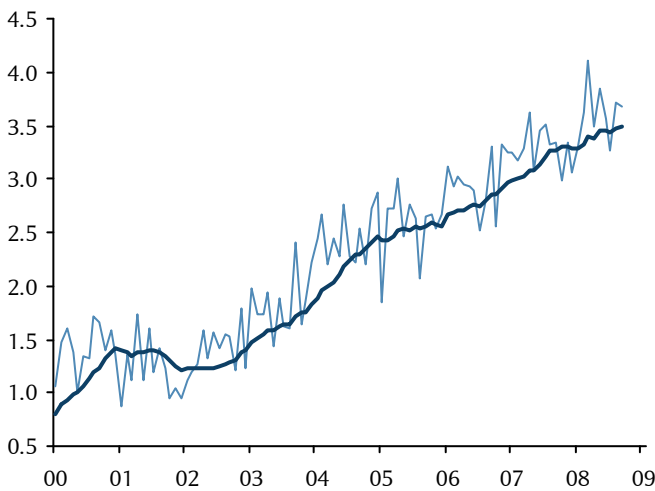
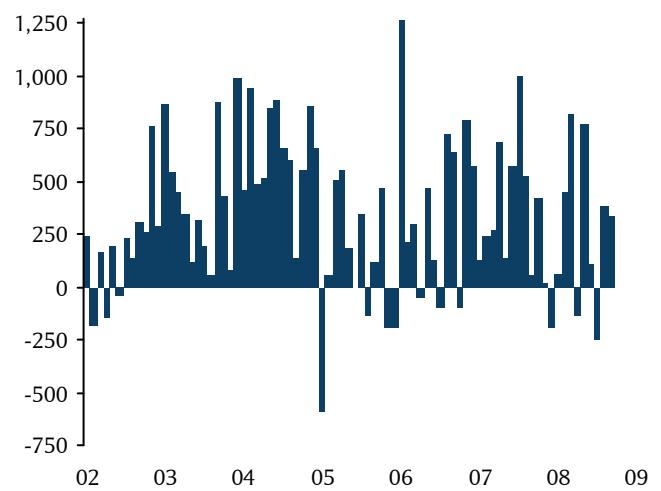


Figure 93: Source of crude oil imports (thousand b/d)

|                   | Sep 08       | change from Aug 08 | change from Sep 07 | 2008 to date | ch from 2007 |
|-------------------|--------------|--------------------|--------------------|--------------|--------------|
| Saudi Arabia      | 996          | 461                | 387                | 676          | 154          |
| Angola            | 527          | -215               | 22                 | 640          | 166          |
| Iran              | 466          | 23                 | 141                | 455          | 49           |
| Oman              | 337          | -34                | 36                 | 292          | 11           |
| Russia            | 221          | -17                | -43                | 240          | -63          |
| Kuwait            | 196          | 5                  | 103                | 113          | 34           |
| Sudan             | 189          | 17                 | -32                | 204          | -6           |
| Congo             | 115          | 83                 | -12                | 87           | -13          |
| Kazakhstan        | 112          | -21                | 16                 | 112          | -9           |
| Brazil            | 92           | -25                | 0                  | 54           | 1            |
| Venezuela         | 70           | 70                 | 26                 | 147          | 55           |
| Yemen             | 66           | -54                | -22                | 79           | 12           |
| UAE               | 48           | -9                 | -54                | 78           | 1            |
| Gabon             | 37           | 8                  | 5                  | 20           | -4           |
| Argentina         | 34           | 34                 | 34                 | 11           | -27          |
| Equatorial Guinea | 32           | -62                | -34                | 65           | -12          |
| Iraq              | 30           | -30                | 11                 | 31           | 0            |
| Malaysia          | 26           | -25                | 7                  | 17           | 10           |
| Ecuador           | 25           | -56                | 25                 | 28           | 27           |
| Peru              | 22           | 22                 | 22                 | 5            | -23          |
| Others            | 40           | -205               | -304               | 264          | -82          |
| <b>TOTAL</b>      | <b>3,682</b> | <b>-30</b>         | <b>334</b>         | <b>3,622</b> | <b>281</b>   |
| <i>of which</i>   |              |                    |                    |              |              |
| OPEC              | 2,366        | 165                | 534                | 2,293        | 445          |
| non-OPEC          | 1,316        | -195               | -199               | 1,328        | -164         |
| North America     | 0            | 0                  | -18                | 3            | -9           |
| South America     | 247          | 25                 | 78                 | 269          | 37           |
| Africa            | 913          | -281               | -226               | 1,142        | 60           |
| Asia-Pacific      | 50           | -92                | -76                | 108          | -4           |
| FSU               | 333          | -38                | -27                | 356          | -69          |
| Middle East       | 2,139        | 356                | 603                | 1,743        | 276          |
| Europe            | 0            | 0                  | 0                  | 0            | -9           |

Figure 96: y/y change in crude imports (thousand b/d)



# US oil production

The shut-ins associated with an active Atlantic hurricane season are likely to be felt most in the September data, but the latest data for August already reflect some impact. US crude oil output fell by 225 thousand b/d m/m, at 4.895 mb/d falling below 5 mb/d for the first time in eleven months. The provisional September data indicates a further 870 thousand b/d downwards lurch in output down to just 4.025 mb/d. Despite the start of hurricane effects in the crude oil portion, the overall level of US output rose y/y by 287 thousand b/d, helped on by higher NGLs output and the continuing sharp rise in corn ethanol output. The 'other' liquids category, including ethanol, rose to a record 861 thousand b/d. The year-to-date increase in total US liquids output is 264 thousand b/d, which will be dented by the 600 thousand b/d y/y decline we expect to see in the September data.

Figure 97: US oil production (thousand b/d)

|              | Crude | NGLs  | Other | Total |
|--------------|-------|-------|-------|-------|
| 2005         | 5,178 | 1,717 | 440   | 7,335 |
| 2006         | 5,102 | 1,739 | 498   | 7,339 |
| 07Q2         | 5,161 | 1,776 | 603   | 7,540 |
| 07Q3         | 4,941 | 1,782 | 631   | 7,355 |
| 07Q4         | 5,039 | 1,851 | 659   | 7,549 |
| 2007         | 5,064 | 1,783 | 615   | 7,462 |
| Feb          | 5,113 | 1,830 | 718   | 7,661 |
| Mar          | 5,139 | 1,847 | 747   | 7,734 |
| 08Q1         | 5,115 | 1,820 | 719   | 7,654 |
| Apr          | 5,162 | 1,880 | 745   | 7,787 |
| May          | 5,166 | 1,908 | 794   | 7,868 |
| Jun          | 5,109 | 1,810 | 764   | 7,683 |
| 08Q2         | 5,146 | 1,866 | 768   | 7,780 |
| Jul          | 5,110 | 1,856 | 814   | 7,779 |
| Aug          | 4,895 | 1,839 | 861   | 7,595 |
| y/y change   | -19   | 71    | 235   | 287   |
| 2008 to date | 5,098 | 1,844 | 767   | 7,710 |
| y/y change   | 2     | 88    | 174   | 264   |

Figure 98: Total output and 12-month average (mb/d)

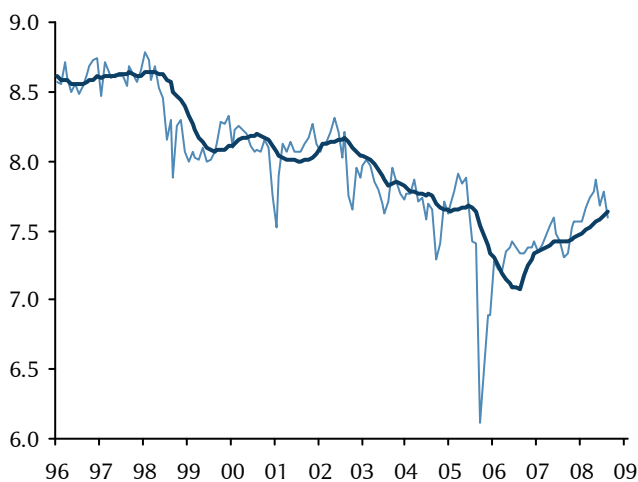


Figure 99: y/y change in total output (thousand b/d)

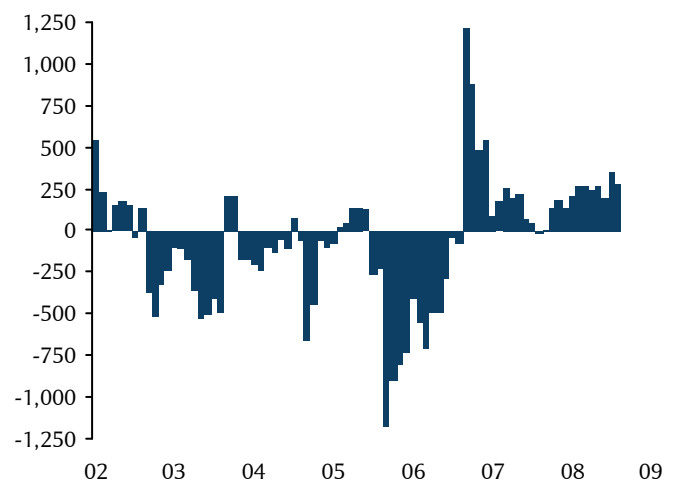


Figure 100: y/y change in crude output (thousand b/d)

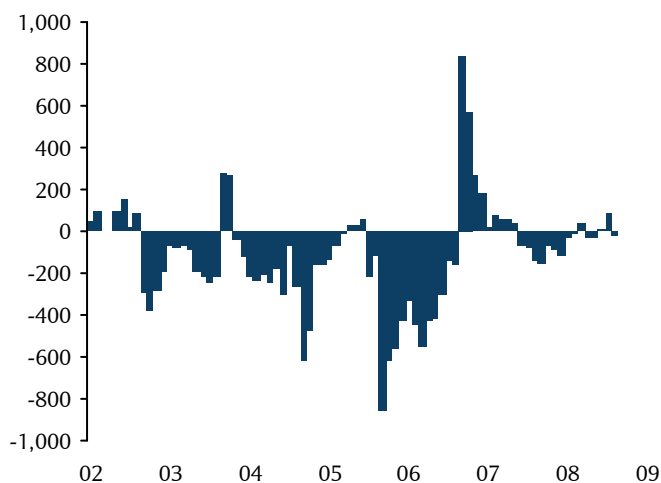
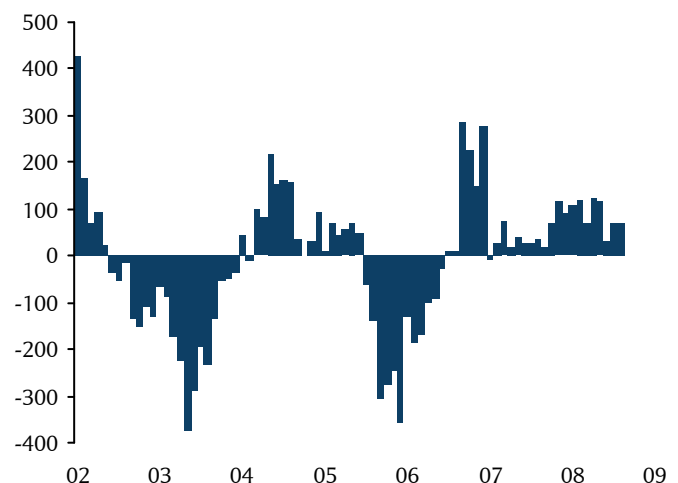


Figure 101: y/y change in NGL output (thousand b/d)



## US data revisions

The latest *Petroleum Supply Monthly* has brought another huge downwards revision to US oil demand. The revision to August data is the largest in what is now a sequence of 24 consecutive downwards revisions. The overall revision brought the total down by 976 thousand b/d from the original estimate, bringing the y/y demand decline to 8.4%. The largest revision was for distillates, with a 565 thousand b/d downwards shift overturning the slight y/y gain seen in the weekly data, and turning it into a precipitous 11.8% y/y decline in demand. Gasoline demand was revised down by 303 thousand b/d taking it to a y/y decline of 5.1%, slightly better than the 5.9% decline registered in July. Given that much of the need for downward revisions has come from initial underestimation of exports, hurricane effects and the delays to trade should cut the size of the next revision.

*Note: Preliminary indications of monthly US series can be derived from the weekly data as reported in Weekly Petroleum Status Report. The first revisions of this preliminary data, plus more detailed disaggregated data, are released by the Energy Information Administration (EIA) in Petroleum Supply Monthly, two months after the end of the month under revision. Final revisions are released in Petroleum Supply Annual, normally in October the following year. In the comparisons that follow, those that involve unrevised data from this year with the original unrevised data from last year are shown in the tables below as Wk v Wk. Comparisons showing revised data are marked as Mth v Mth. The comparison using all data that held before the release of the latest revisions is marked as Wk v Mth. The fullest information is given by Mth v Mth and is in our view superior to all other measures, while Wk v Mth shows the full information set prior to revision. Such Wk v Mth comparisons are shown as grey bars in the graphs on the following pages. Finally, Wk v Wk involves retaining known errors, but indicates the view as seen by those relying on unrevised comparisons from the weekly data.*

Figure 102: US oil inventories, revisions and y/y comparisons (mb)

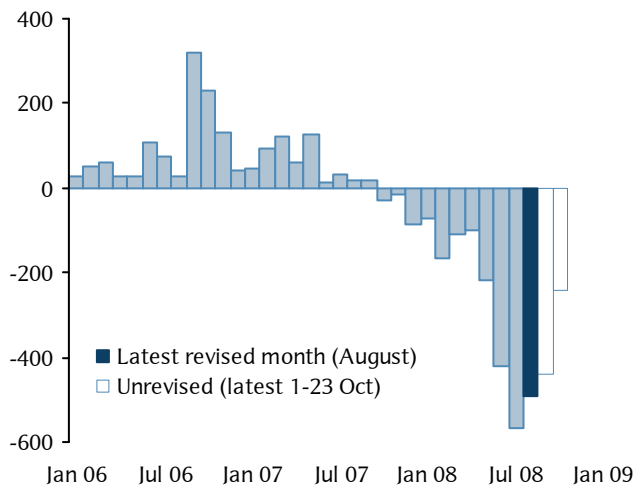
| Inventories      | Aug 08 | Revision | y/y change |          |         |
|------------------|--------|----------|------------|----------|---------|
|                  |        |          | Mth v Mth  | Wk v Mth | Wk v Wk |
| Gasoline         | 194.9  | 3.3      | 0.9        | -2.4     | 0.6     |
| Total distillate | 132.5  | 1.3      | -2.1       | -3.4     | -1.3    |
| Heating oil      | 35.6   | 0.0      | -5.4       | -5.4     | -5.4    |
| Diesel           | 96.0   | 10.9     | 2.9        | -8.0     | -6.3    |
| Jet fuel         | 40.8   | -0.3     | -0.1       | 0.1      | -0.1    |
| Residual         | 38.6   | 1.5      | 2.2        | 0.7      | 0.6     |
| Unfinished oils  | 89.8   | 2.9      | 0.4        | -2.6     | -2.4    |
| Other oils       | 205.0  | 10.9     | -4.4       | -15.3    | -9.0    |
| Total products   | 701.7  | 19.7     | -3.0       | -22.8    | -11.4   |
| Crude            | 301.5  | 0.1      | -19.0      | -19.2    | -27.3   |
| Total            | 1003.2 | 19.9     | -22.1      | -41.9    | -38.7   |

Figure 103: US oil demand, revisions and y/y comparisons (thousand/b/d)

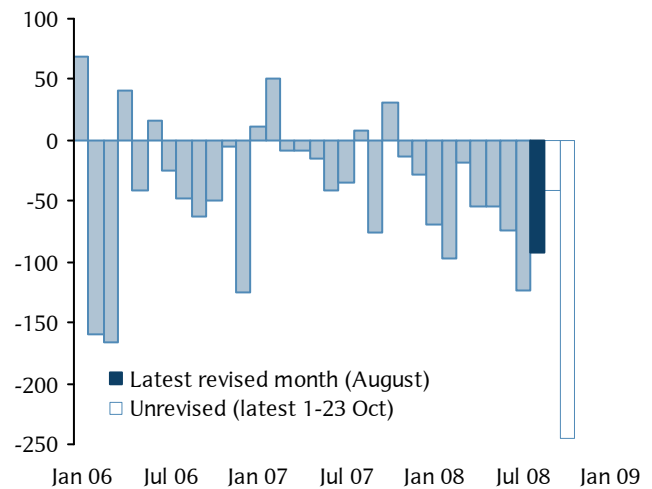
| Demand             | Aug 08 | Revision | y/y change |          |         |
|--------------------|--------|----------|------------|----------|---------|
|                    |        |          | Mth v Mth  | Wk v Mth | Wk v Wk |
| Gasoline           | 9090   | -303     | -492       | -188     | -229    |
| Distillate         | 3657   | -565     | -488       | 77       | 19      |
| Jet Fuel           | 1611   | 51       | -92        | -144     | -88     |
| Residual           | 526    | -15      | -234       | -219     | -245    |
| Main four products | 14885  | -832     | -1306      | -475     | -543    |
| Other              | 4381   | -144     | -452       | -309     | -457    |
| Total              | 19267  | -976     | -1759      | -783     | -1000   |

# US data revisions

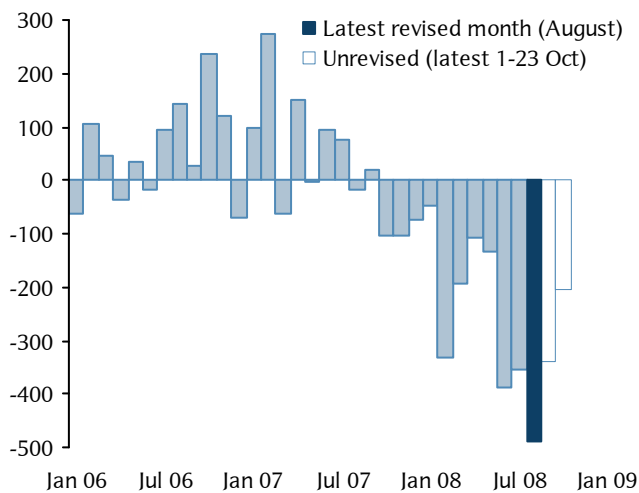
**Figure 104: y/y change in US gasoline demand (thousand b/d)**



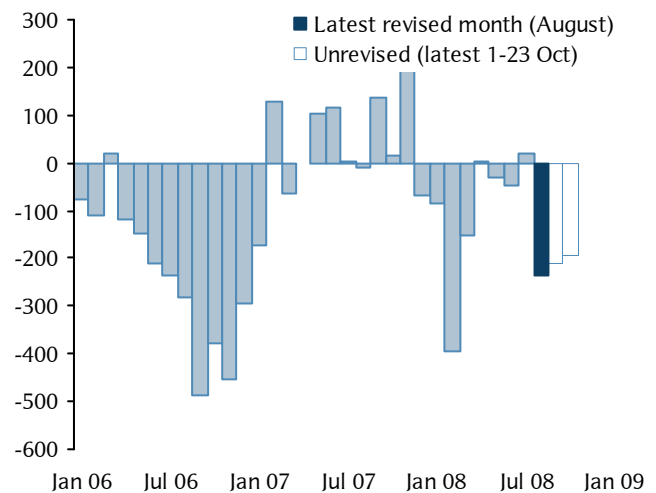
**Figure 105: y/y change in US jet fuel demand (thousand b/d)**



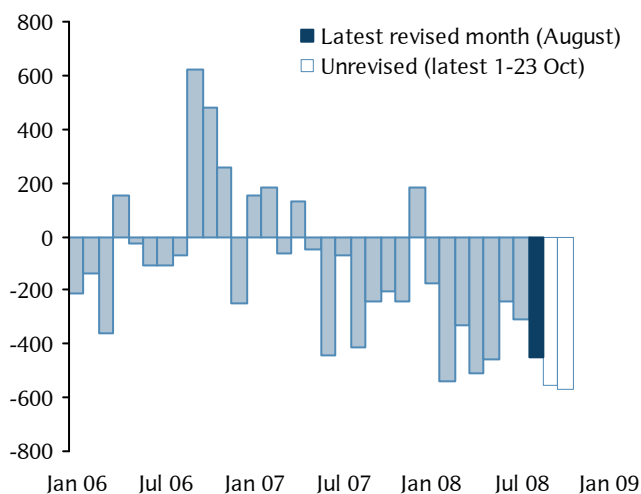
**Figure 106: y/y change in US distillates demand (thousand b/d)**



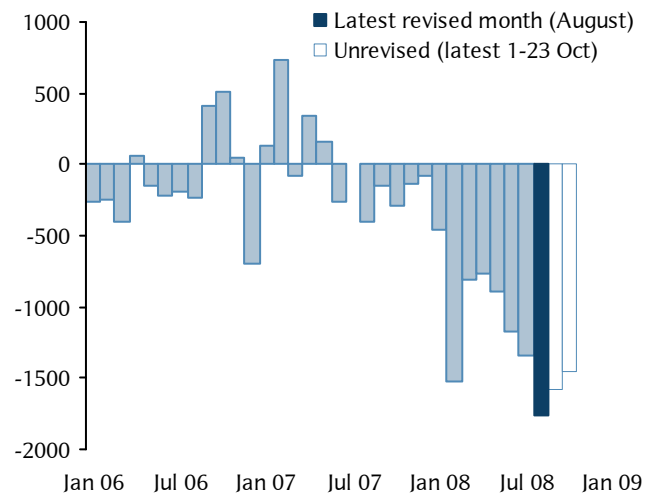
**Figure 107: y/y change in US residual fuel oil demand (thousand b/d)**



**Figure 108: y/y change in US 'other oils' demand (thousand b/d)**



**Figure 109: y/y change in US total oil demand (thousand b/d)**



# US data revisions

Figure 110: y/y change in total oil inventories (mb)

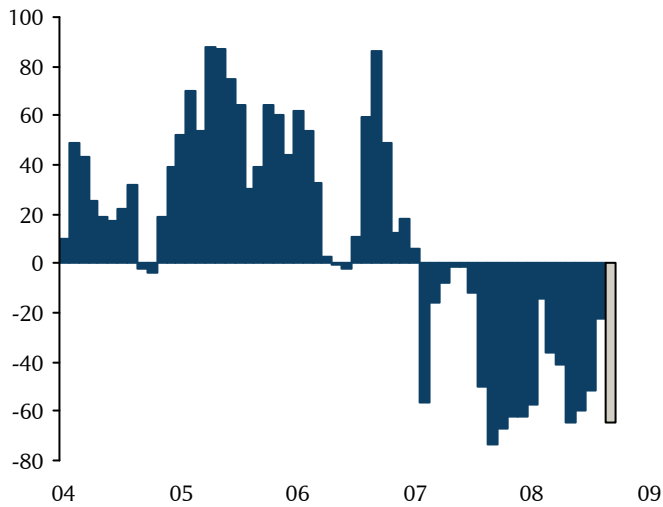


Figure 111: Total relative to 5-year average (mb)

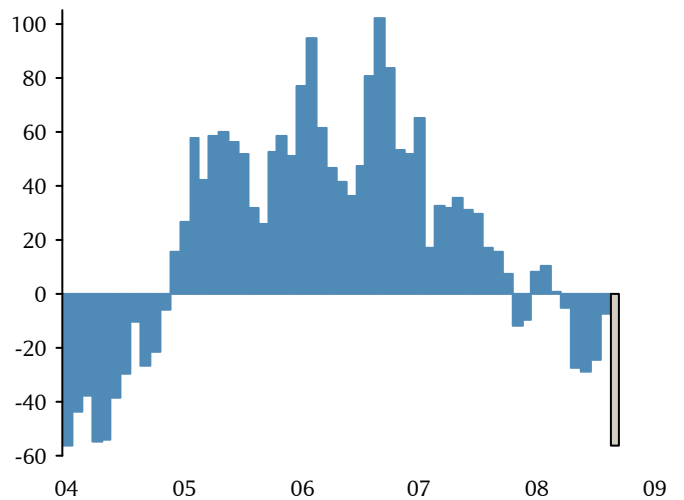


Figure 112: y/y change in crude oil inventories (mb)

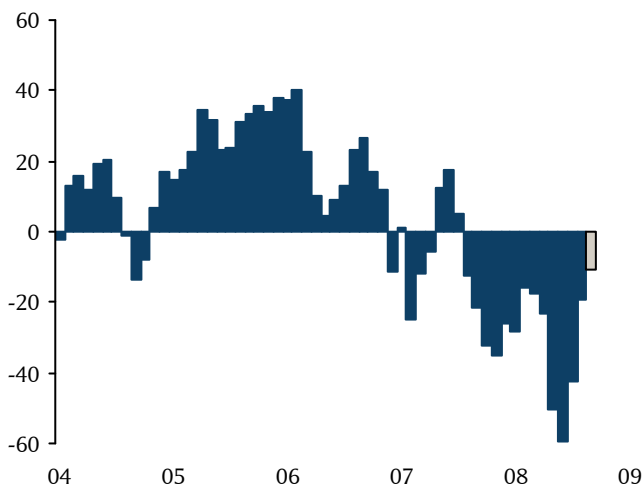


Figure 113: Crude oil relative to 5-year average (mb)

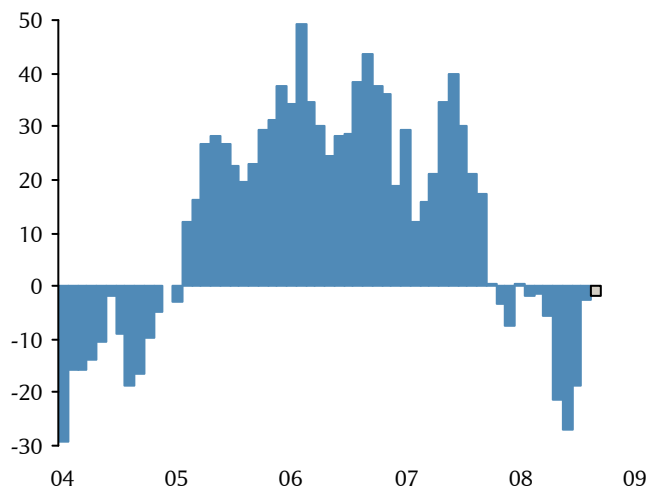


Figure 114: y/y change in oil product inventories (mb)

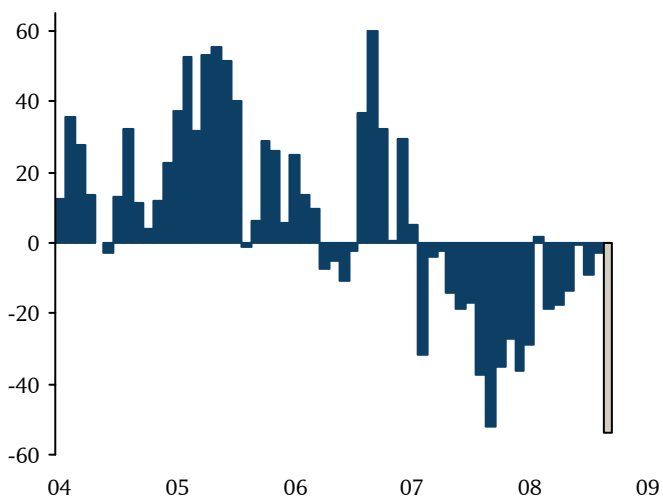
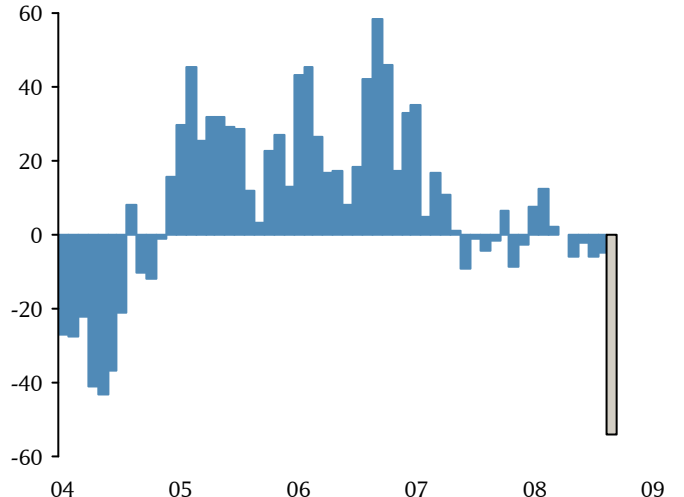


Figure 115: Products relative to 5-year average (mb)



# US data revisions

Figure 116: y/y change in gasoline inventories (mb)

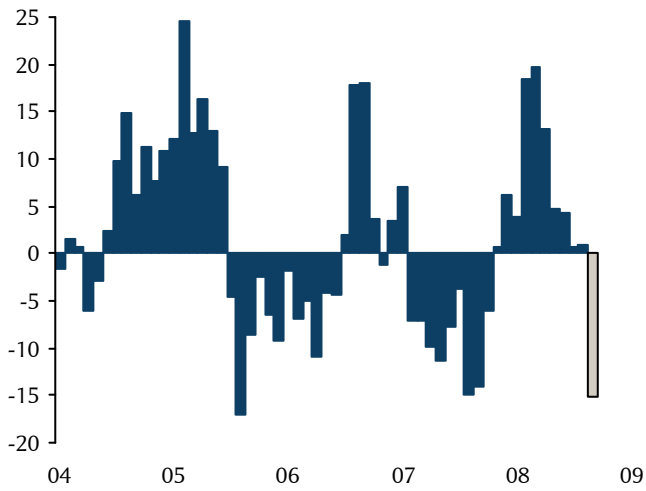


Figure 117: Gasoline relative to 5-year average (mb)

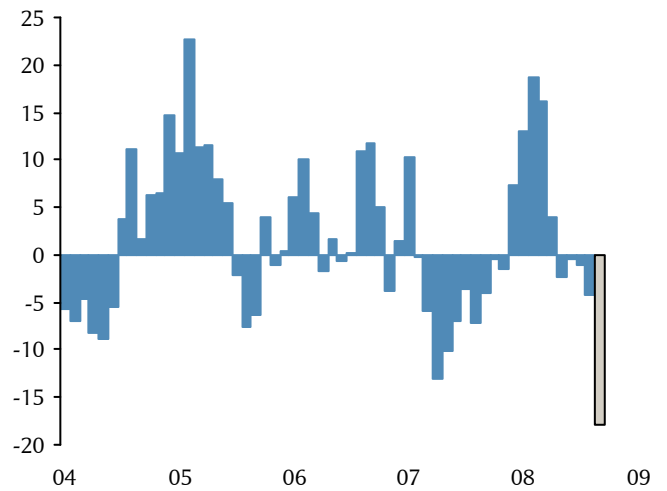


Figure 118: y/y change in distillate inventories (mb)

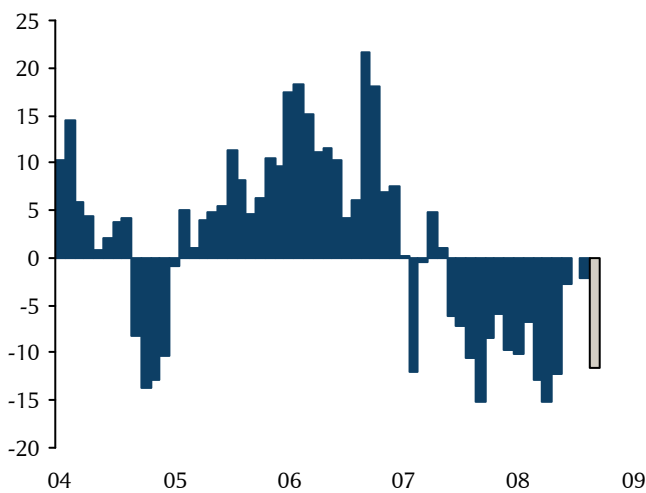


Figure 119: Distillate relative to 5-year average (mb)

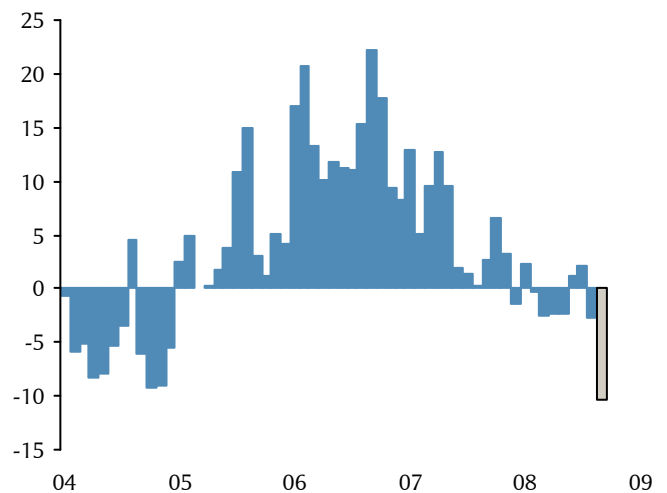


Figure 120: y/y change in "other oils" inventories (mb)

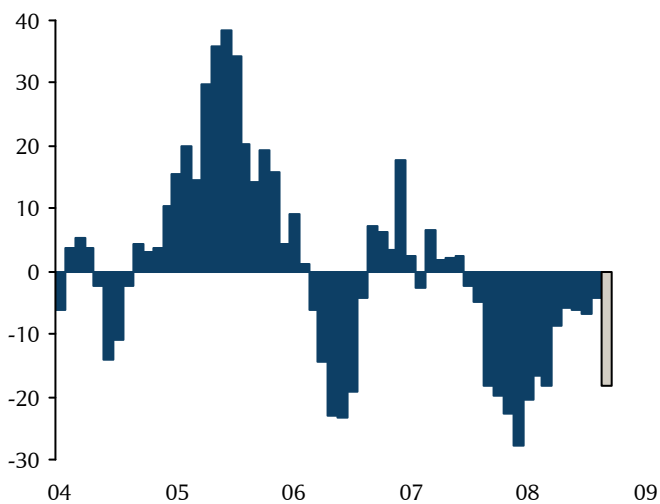
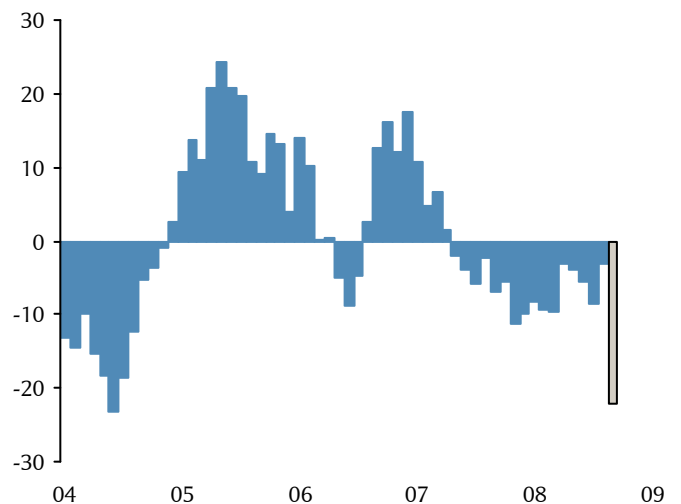


Figure 121: "Other oils" relative to 5-year average (mb)



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# Markets and prices

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# Price ranges and crude oil forward curves

Figure 122: WTI range, last 25 days (\$/b)

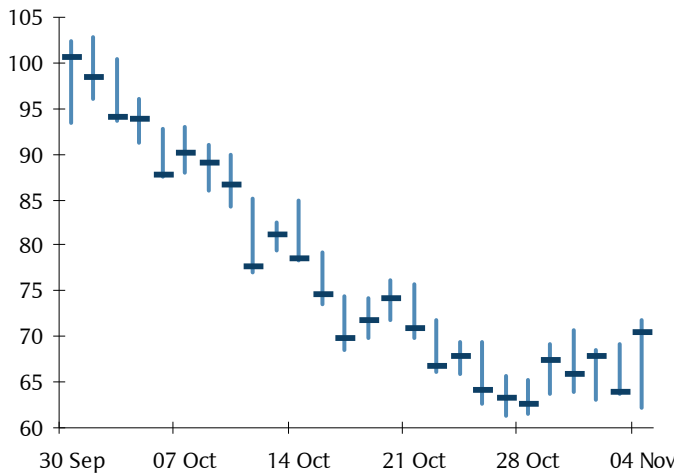


Figure 123: Brent range, last 25 days (\$/b)

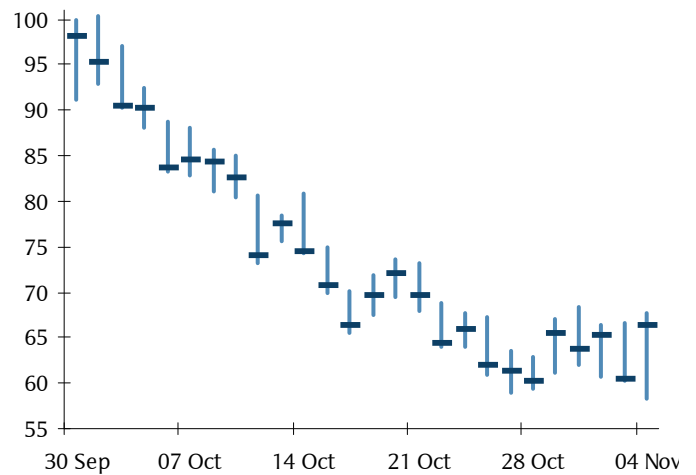


Figure 124: Gasoline range, last 25 days (cents/gal)

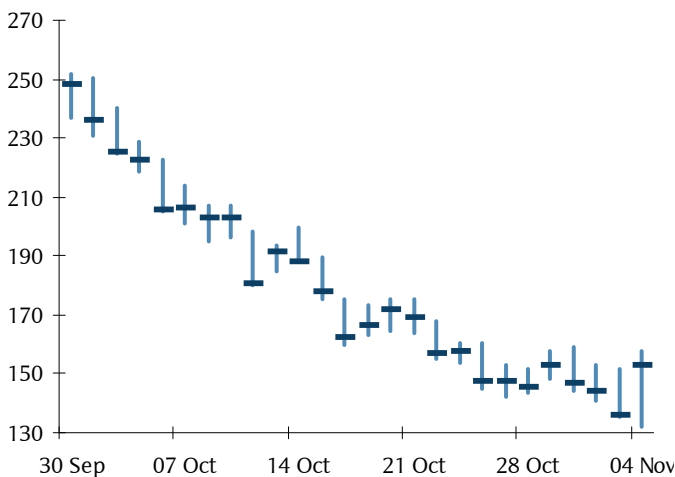


Figure 125: Henry Hub range, last 25 days (\$/mmbtu)

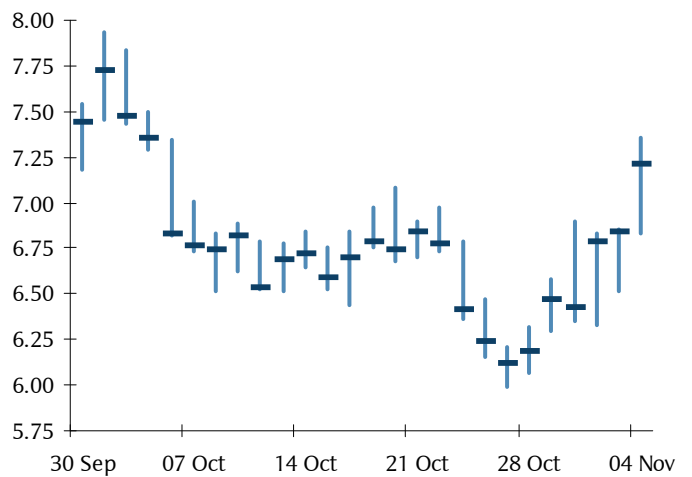


Figure 126: WTI forward curve (\$/b)

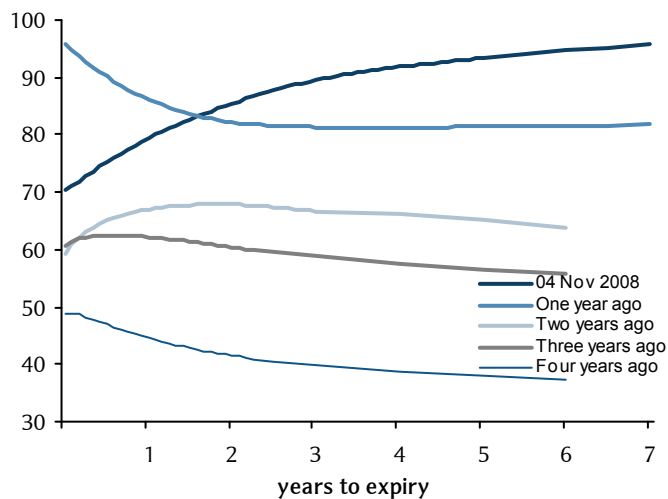
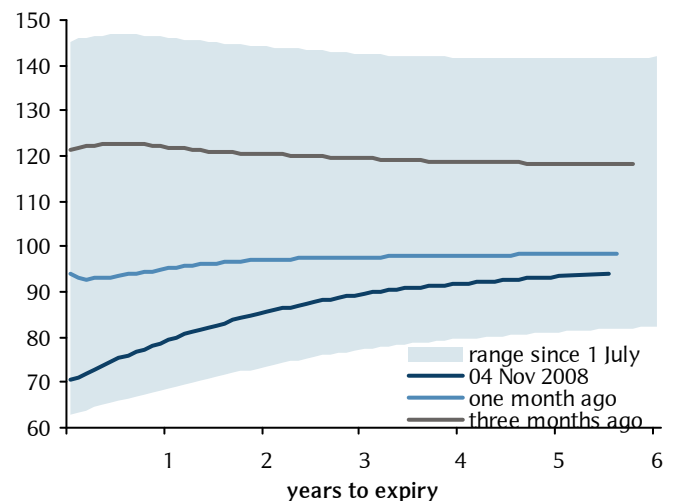


Figure 127: WTI forward curve trading range (\$/b)



# Saudi Arabian crude oil pricing

Figure 128: Adjustment factors (\$/b)

|                  | Jul    | Aug    | Sep   | Oct    | Nov    |
|------------------|--------|--------|-------|--------|--------|
| <b>To Asia</b>   |        |        |       |        |        |
| Arab Super Light | 7.80   | 6.00   | 4.25  | 2.55   | 1.20   |
| Arab Extra Light | 6.10   | 5.15   | 3.80  | 2.30   | 1.20   |
| Arab Light       | 2.05   | 1.35   | 0.70  | 0.00   | -0.65  |
| Arab Medium      | -3.70  | -3.70  | -2.95 | -2.25  | -2.65  |
| Arab Heavy       | -7.95  | -7.60  | -6.10 | -4.60  | -5.00  |
| <b>To US</b>     |        |        |       |        |        |
| Arab Extra Light | 2.40   | 0.10   | -1.35 | -3.10  | -3.40  |
| Arab Light       | -2.45  | -3.00  | -3.65 | -5.05  | -5.25  |
| Arab Medium      | -8.30  | -7.40  | -6.70 | -7.90  | -8.00  |
| Arab Heavy       | -12.30 | -11.10 | -9.45 | -10.15 | -10.15 |
| <b>To Europe</b> |        |        |       |        |        |
| Arab Extra Light | -0.50  | -1.25  | -1.45 | -1.75  | -1.60  |
| Arab Light       | -5.75  | -5.25  | -4.65 | -4.55  | -4.45  |
| Arab Medium      | -10.00 | -9.00  | -7.60 | -7.20  | -7.30  |
| Arab Heavy       | -13.05 | -11.55 | -9.75 | -9.00  | -9.20  |

Notes :

All prices are on a fob Saudi Arabia basis.

The marker for Asian sales is the average of Dubai and Oman, evaluated as an average of month of bill of lading.

The marker for European sales is the Brent Weighted Average (BWAVE), as declared by the IPE in London, evaluated 40 days around after bill of lading.

The marker for US sales is West Texas Intermediate (WTI), evaluated 50 days after bill of lading.

Figure 129: Adjustment factors for Asia (\$/b)

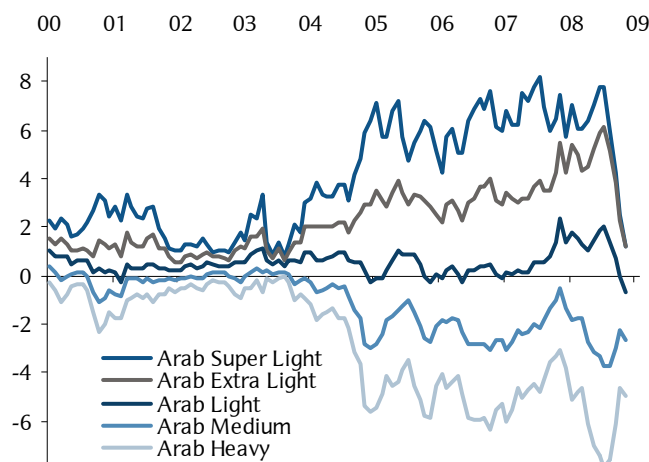


Figure 130: Adjustment factors for Europe (\$/b)

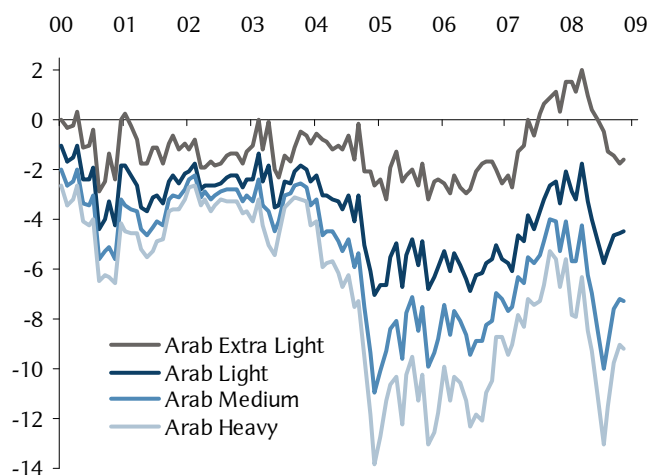


Figure 131: Monthly average values in US market (\$/b)

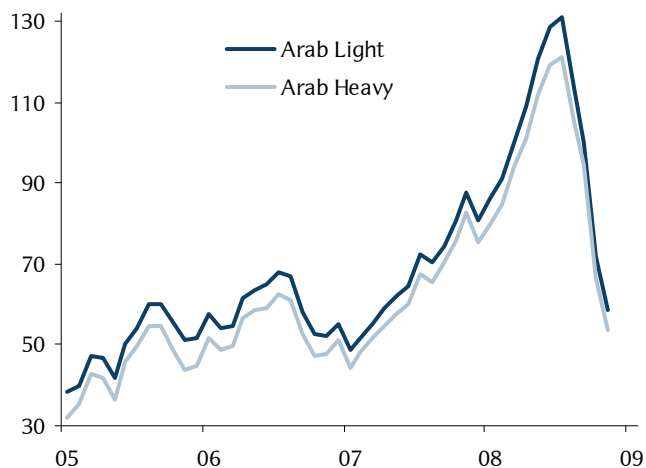
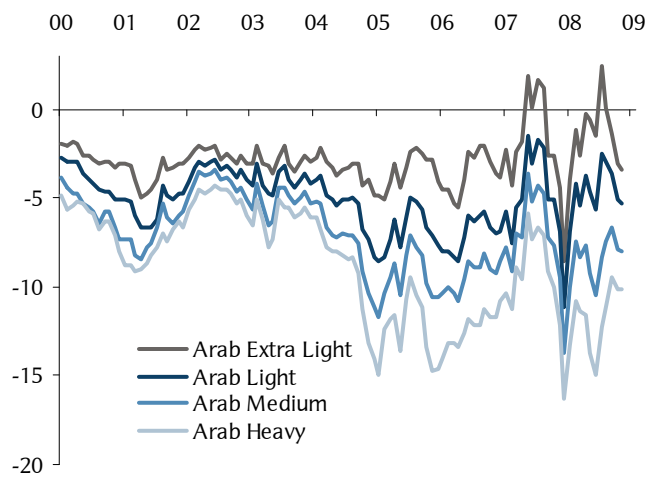


Figure 132: Adjustment factors for US (\$/b)



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# **Market balances and price forecasts**

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# Supply-demand projections

Figure 133: Oil market balances from four sources (mb/d)

| Barclays Capital            | 2007        | Annual change | Q108 | Q208 | Q308 | Q408 | 2008        | Annual change | Q109 | Q209 | Q309 | Q409 | 2009        | Annual change |
|-----------------------------|-------------|---------------|------|------|------|------|-------------|---------------|------|------|------|------|-------------|---------------|
| <b>Demand</b>               | <b>86.1</b> | <b>1.06</b>   | 86.8 | 85.4 | 85.9 | 87.0 | <b>86.3</b> | <b>0.15</b>   | 87.1 | 85.8 | 86.2 | 87.3 | <b>86.6</b> | <b>0.32</b>   |
| OECD demand                 | 49.1        | -0.43         | 48.7 | 47.1 | 47.4 | 48.4 | 47.9        | -1.26         | 47.9 | 46.5 | 46.6 | 47.5 | 47.1        | -0.76         |
| non-OECD demand             | 37.0        | 1.49          | 38.1 | 38.3 | 38.5 | 38.7 | 38.4        | 1.41          | 39.2 | 39.3 | 39.6 | 39.8 | 39.5        | 1.08          |
| <b>Non-OPEC supply</b>      | <b>49.3</b> | <b>0.47</b>   | 49.3 | 49.3 | 48.5 | 49.4 | <b>49.2</b> | <b>-0.11</b>  | 49.2 | 49.2 | 48.8 | 48.8 | <b>49.1</b> | <b>-0.02</b>  |
| non-OPEC excluding FSU      | 36.7        | 0.03          | 36.8 | 36.7 | 35.9 | 36.5 | 36.5        | -0.23         | 36.5 | 36.4 | 36.0 | 35.8 | 36.3        | -0.21         |
| FSU                         | 12.6        | 0.44          | 12.5 | 12.7 | 12.6 | 12.9 | 12.7        | 0.12          | 12.7 | 12.8 | 12.9 | 13.1 | 12.9        | 0.19          |
| OPEC NGLs/condensates       | 4.6         | 0.25          | 4.8  | 5.0  | 5.1  | 5.1  | 5.0         | 0.36          | 5.3  | 5.5  | 5.5  | 5.6  | 5.4         | 0.48          |
| Call on OPEC crude + stocks | 32.3        | 0.34          | 32.6 | 31.1 | 32.3 | 32.5 | 32.2        | -0.10         | 32.7 | 31.1 | 31.8 | 32.9 | 32.0        | -0.14         |
| OPEC crude                  | 31.2        | -0.35         | 32.3 | 32.4 | 32.6 | 32.3 | 32.4        | 1.16          | 31.7 | 31.9 | 32.2 | 32.2 | 32.0        | -0.37         |
| OPEC 10 crude               | 26.9        | -0.77         | 27.6 | 27.5 | 27.7 | 27.5 | 27.6        | 0.68          | 26.9 | 27.1 | 27.4 | 27.3 | 27.2        | -0.42         |
| Stockbuild                  | -1.0        |               | -0.4 | 1.2  | 0.3  | -0.2 | 0.2         |               | -1.0 | 0.8  | 0.4  | -0.7 | 0.0         |               |

| IEA                         | 2007        | Annual change | Q108 | Q208 | Q308 | Q408 | 2008        | Annual change | Q109 | Q209 | Q309 | Q409 | 2009        | Annual change |
|-----------------------------|-------------|---------------|------|------|------|------|-------------|---------------|------|------|------|------|-------------|---------------|
| <b>Demand</b>               | <b>86.1</b> | <b>0.96</b>   | 86.9 | 85.7 | 85.9 | 87.6 | <b>86.5</b> | <b>0.44</b>   | 87.4 | 86.2 | 86.7 | 88.5 | <b>87.2</b> | <b>0.69</b>   |
| OECD demand                 | 49.2        | -0.40         | 48.9 | 47.2 | 47.3 | 48.9 | 48.1        | -1.09         | 48.1 | 46.4 | 47.0 | 48.5 | 47.5        | -0.61         |
| non-OECD demand             | 36.9        | 1.36          | 38.0 | 38.5 | 38.5 | 38.7 | 38.4        | 1.53          | 39.3 | 39.8 | 39.8 | 40.1 | 39.7        | 1.30          |
| <b>Non-OPEC supply</b>      | <b>49.6</b> | <b>0.41</b>   | 49.8 | 49.7 | 49.1 | 50.5 | <b>49.8</b> | <b>0.15</b>   | 51.2 | 50.3 | 49.8 | 50.4 | <b>50.4</b> | <b>0.66</b>   |
| non-OPEC excluding FSU      | 36.8        | -0.16         | 37.0 | 36.8 | 36.5 | 37.6 | 37.0        | 0.11          | 38.0 | 37.2 | 36.9 | 37.5 | 37.4        | 0.43          |
| FSU                         | 12.8        | 0.57          | 12.8 | 12.9 | 12.6 | 12.9 | 12.8        | 0.04          | 13.2 | 13.1 | 12.9 | 12.9 | 13.0        | 0.23          |
| OPEC NGLs/condensates       | 4.8         | 0.17          | 4.9  | 4.9  | 5.1  | 5.4  | 5.1         | 0.31          | 5.6  | 5.8  | 6.0  | 6.1  | 5.9         | 0.80          |
| Call on OPEC crude + stocks | 31.7        | 0.38          | 32.2 | 31.1 | 31.7 | 31.7 | 31.7        | -0.02         | 30.7 | 30.0 | 30.9 | 32.0 | 30.9        | -0.76         |
| OPEC crude                  | 30.7        | -0.39         | 32.4 | 32.2 | 32.5 | -    | -           | -             | -    | -    | -    | -    | -           | -             |
| Stockbuild                  | -0.5        |               | 0.2  | 1.1  | 0.9  | -    | -           |               | -    | -    | -    | -    | -           |               |

| OPEC                        | 2007        | Annual change | Q108 | Q208 | Q308 | Q408 | 2008        | Annual change | Q109 | Q209 | Q309 | Q409 | 2009        | Annual change |
|-----------------------------|-------------|---------------|------|------|------|------|-------------|---------------|------|------|------|------|-------------|---------------|
| <b>Demand</b>               | <b>85.9</b> |               | 86.7 | 85.4 | 85.7 | 88.0 | <b>86.5</b> | <b>0.55</b>   | 87.5 | 86.1 | 86.4 | 88.9 | <b>87.2</b> | <b>0.76</b>   |
| OECD demand                 | 49.2        |               | 48.9 | 47.2 | 47.4 | 49.7 | 48.3        | -0.89         | 48.6 | 46.7 | 46.9 | 49.4 | 47.9        | -0.38         |
| non-OECD demand             | 36.7        |               | 37.8 | 38.2 | 38.3 | 38.4 | 38.2        | 1.44          | 38.9 | 39.3 | 39.5 | 39.5 | 39.3        | 1.14          |
| <b>Non-OPEC supply</b>      | <b>49.4</b> | <b>0.55</b>   | 49.6 | 49.6 | 48.9 | 50.8 | <b>49.7</b> | <b>0.31</b>   | 51.1 | 50.6 | 50.3 | 50.8 | <b>50.7</b> | <b>0.97</b>   |
| non-OPEC excluding FSU      | 36.9        | 0.05          | 37.0 | 37.0 | 36.5 | 37.7 | 37.0        | 0.12          | 38.0 | 37.5 | 37.4 | 37.8 | 37.6        | 0.63          |
| FSU                         | 12.5        | 0.50          | 12.6 | 12.7 | 12.5 | 13.1 | 12.7        | 0.19          | 13.1 | 13.1 | 12.9 | 13.1 | 13.1        | 0.34          |
| OPEC NGLs+ non-conv. oil    | 4.2         | 0.14          | 4.5  | 4.7  | 4.8  | 4.9  | 4.7         | 0.49          | 5.1  | 5.2  | 5.5  | 5.6  | 5.4         | 0.66          |
| Call on OPEC crude + stocks | 32.3        | 85.21         | 32.6 | 31.1 | 32.0 | 32.4 | 32.0        | -0.26         | 31.3 | 30.3 | 30.6 | 32.4 | 31.2        | -0.85         |
| OPEC crude                  | 31.0        | -0.46         | 32.1 | 32.1 | 32.4 | -    | -           | -             | -    | -    | -    | -    | -           | -             |
| Stockbuild                  | -1.3        |               | -0.5 | 1.0  | 0.4  | -    | -           |               | -    | -    | -    | -    | -           |               |

| US Department of Energy     | 2007        | Annual change | Q108 | Q208 | Q308 | Q408 | 2008        | Annual change | Q109 | Q209 | Q309 | Q409 | 2009        | Annual change |
|-----------------------------|-------------|---------------|------|------|------|------|-------------|---------------|------|------|------|------|-------------|---------------|
| <b>Demand</b>               | <b>85.8</b> | <b>0.86</b>   | 86.0 | 85.2 | 85.6 | 87.7 | <b>86.1</b> | <b>0.33</b>   | 86.9 | 86.0 | 86.6 | 88.2 | <b>86.9</b> | <b>0.78</b>   |
| OECD demand                 | 49.1        | -0.43         | 48.7 | 47.1 | 47.4 | 49.1 | 48.1        | -1.07         | 48.4 | 46.5 | 47.1 | 48.4 | 47.6        | -0.51         |
| non-OECD demand             | 36.7        | 1.30          | 37.4 | 38.1 | 38.2 | 38.6 | 38.1        | 1.40          | 38.6 | 39.6 | 39.5 | 39.8 | 39.4        | 1.29          |
| <b>Non-OPEC supply</b>      | <b>49.0</b> | <b>0.29</b>   | 48.6 | 48.9 | 48.3 | 49.3 | <b>48.8</b> | <b>-0.20</b>  | 49.0 | 49.3 | 49.8 | 49.9 | <b>49.5</b> | <b>0.73</b>   |
| non-OPEC excluding FSU      | 36.4        | -0.16         | 36.0 | 36.3 | 36.1 | 36.5 | 36.2        | -0.16         | 36.2 | 36.5 | 36.8 | 36.9 | 36.6        | 0.38          |
| FSU                         | 12.6        | 0.45          | 12.6 | 12.6 | 12.3 | 12.8 | 12.6        | -0.04         | 12.8 | 12.8 | 13.0 | 13.0 | 12.9        | 0.35          |
| OPEC NGLs/condensates       | 4.5         | 0.03          | 4.6  | 4.6  | 4.8  | 4.9  | 4.7         | 0.20          | 5.2  | 5.6  | 5.9  | 6.1  | 5.7         | 0.97          |
| Call on OPEC crude + stocks | 32.3        | 0.54          | 32.8 | 31.8 | 32.5 | 33.5 | 32.6        | 0.33          | 32.8 | 31.2 | 30.9 | 32.1 | 31.7        | -0.92         |
| OPEC crude                  | 30.9        | -0.44         | 32.1 | 32.3 | 32.7 | 32.4 | 32.4        | 1.48          | 31.7 | 31.5 | 31.6 | 31.5 | 31.6        | -0.79         |
| Stockbuild                  | 0.0         |               | -0.7 | 0.6  | 0.2  | -1.0 | 0.0         |               | -1.0 | 0.4  | 0.7  | -0.6 | 0.0         |               |

Notes: The latest IEA numbers are taken from IEA Monthly Oil Report October 2008. OPEC data comes from OPEC's Monthly Oil Market Report, October 2008. The US DOE numbers are from Energy Information Administration, Short Term Energy Outlook October 2007. The IEA includes about 0.3 mb/d of Saudi Arabian ethane in both its demand and its OPEC NGLs estimates. The IEA and OPEC do not project OPEC crude oil output. In all numbers refinery gain is included as part of the figures for non-OPEC supply excluding the FSU. All of the estimates shown above include Angola and Ecuador in OPEC for both forward looking and historic data.

# Non-OPEC supply

Figure 134: Non-OPEC supply and projected annual changes

|                            | Barclays Estimates |       |       | 2008 increase |       |       |       | 2009 increase |       |       |       |
|----------------------------|--------------------|-------|-------|---------------|-------|-------|-------|---------------|-------|-------|-------|
|                            | 2007               | 2008  | 2009  | Barclays      | IEA   | OPEC  | DOE   | Barclays      | IEA   | OPEC  | DOE   |
| <b>North America</b>       | 14.29              | 14.08 | 14.03 | -0.21         | -0.17 | -0.11 | -0.18 | -0.05         | 0.22  | 0.23  | 0.45  |
| Canada                     | 3.35               | 3.33  | 3.41  | -0.02         | -0.03 | 0.09  | 0.01  | 0.08          | 0.16  | 0.09  | 0.20  |
| Mexico                     | 3.48               | 3.16  | 2.84  | -0.32         | -0.28 | -0.28 | -0.30 | -0.32         | -0.23 | -0.14 | -0.21 |
| USA                        | 7.46               | 7.59  | 7.78  | 0.13          | 0.14  | 0.07  | 0.13  | 0.19          | 0.28  | 0.28  | 0.45  |
| <b>S+C America</b>         | 3.79               | 3.92  | 4.15  | 0.13          | 0.20  | 0.20  | 0.17  | 0.23          | 0.26  | 0.25  | 0.28  |
| Argentina                  | 0.75               | 0.73  | 0.71  | -0.02         | -0.01 | -0.02 | -0.02 | -0.02         | 0.01  | -0.03 | 0.00  |
| Brazil                     | 2.11               | 2.23  | 2.50  | 0.12          | 0.15  | 0.17  | 0.16  | 0.26          | 0.23  | 0.27  | 0.30  |
| Colombia                   | 0.53               | 0.55  | 0.54  | 0.02          | 0.04  | 0.05  | 0.03  | -0.01         | 0.00  | 0.02  | -0.03 |
| <b>Europe</b>              | 5.05               | 4.72  | 4.24  | -0.33         | -0.26 | -0.22 | -0.29 | -0.48         | -0.44 | -0.32 | -0.31 |
| Denmark                    | 0.31               | 0.29  | 0.26  | -0.03         | -     | -0.02 | -     | -0.03         | -     | 0.00  | -     |
| Norway                     | 2.56               | 2.39  | 2.17  | -0.17         | -0.13 | -0.11 | -0.15 | -0.22         | -0.23 | -0.15 | -0.11 |
| UK                         | 1.62               | 1.49  | 1.26  | -0.13         | -0.11 | -0.14 | -0.11 | -0.23         | -0.16 | -0.17 | -0.18 |
| <b>Middle East</b>         | 1.66               | 1.66  | 1.56  | -0.01         | -0.03 | -0.02 | 0.02  | -0.10         | -0.06 | 0.02  | -0.03 |
| Oman                       | 0.76               | 0.79  | 0.75  | 0.03          | 0.02  | 0.04  | 0.03  | -0.04         | -0.01 | 0.05  | -0.03 |
| Syria                      | 0.45               | 0.44  | 0.41  | -0.01         | -0.01 | -0.02 | 0.00  | -0.03         | -0.01 | -0.01 | 0.02  |
| Yemen                      | 0.32               | 0.30  | 0.28  | -0.01         | -0.03 | -0.04 | -0.01 | -0.02         | -0.04 | -0.02 | -0.01 |
| <b>Asia Pacific</b>        | 6.74               | 6.82  | 6.98  | 0.08          | 0.16  | 0.19  | 0.07  | 0.15          | 0.27  | 0.37  | -0.03 |
| Australia                  | 0.56               | 0.57  | 0.62  | 0.02          | 0.03  | 0.03  | 0.01  | 0.05          | 0.08  | 0.12  | 0.01  |
| Brunei                     | 0.20               | 0.20  | 0.20  | 0.00          | -     | -0.02 | -     | 0.00          | -     | 0.01  | -     |
| China                      | 3.76               | 3.82  | 3.87  | 0.06          | 0.10  | 0.08  | 0.05  | 0.05          | 0.08  | 0.05  | -0.03 |
| India                      | 0.79               | 0.78  | 0.76  | -0.01         | 0.02  | 0.00  | 0.00  | -0.02         | 0.01  | 0.00  | 0.00  |
| Malaysia                   | 0.72               | 0.75  | 0.78  | 0.03          | 0.00  | 0.03  | 0.02  | 0.03          | 0.03  | 0.04  | -0.02 |
| Vietnam                    | 0.32               | 0.31  | 0.35  | -0.01         | -     | 0.01  | -0.02 | 0.04          | -     | 0.08  | 0.04  |
| <b>Africa</b>              | 1.03               | 0.77  | 0.49  | -0.26         | 0.05  | 0.05  | 0.03  | -0.28         | 0.00  | 0.05  | 0.03  |
| Chad                       | 0.19               | 0.20  | 0.20  | 0.01          | -     | 0.00  | -     | 0.00          | -     | -0.03 | -     |
| Egypt                      | 0.70               | 0.66  | 0.63  | -0.04         | -0.02 | -0.01 | -0.03 | -0.03         | -0.03 | -0.01 | -0.06 |
| Equatorial Guinea          | 0.35               | 0.35  | 0.35  | 0.01          | -     | 0.01  | -0.01 | 0.00          | -     | -0.01 | -0.01 |
| Gabon                      | 0.24               | 0.24  | 0.22  | -0.01         | 0.00  | -0.01 | 0.01  | -0.02         | 0.01  | 0.03  | -0.01 |
| Sudan                      | 0.46               | 0.52  | 0.54  | 0.06          | -     | 0.02  | 0.05  | 0.02          | -     | -0.02 | 0.07  |
| <b>Former Soviet Union</b> | 12.56              | 12.67 | 12.86 | 0.12          | 0.04  | 0.19  | -0.03 | 0.19          | 0.23  | 0.35  | 0.34  |
| Azerbaijan                 | 0.86               | 1.02  | 1.20  | 0.16          | -     | 0.12  | 0.07  | 0.17          | -     | 0.16  | 0.30  |
| Kazakhstan                 | 1.38               | 1.46  | 1.55  | 0.08          | -     | 0.07  | 0.00  | 0.09          | -     | 0.10  | 0.09  |
| Russia                     | 9.90               | 9.81  | 9.74  | -0.09         | -0.06 | -0.02 | -0.10 | -0.07         | -0.15 | 0.08  | -0.05 |

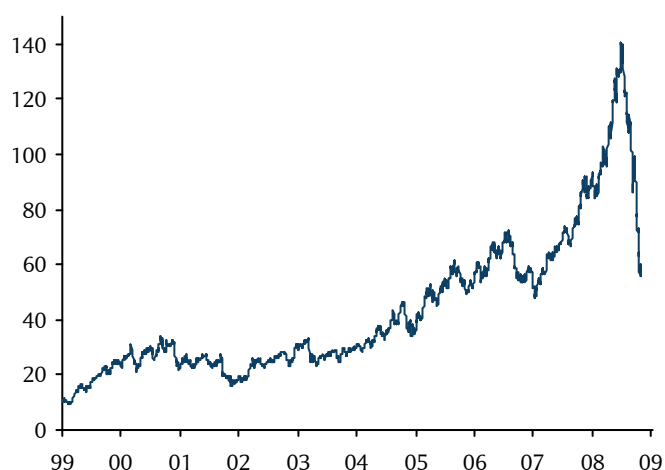
## Barclays Capital price forecasts

|                  | WTI<br>\$/b  | Brent<br>\$/b | US natural gas<br>\$/mmbtu |
|------------------|--------------|---------------|----------------------------|
| <b>Forecasts</b> |              |               |                            |
| <b>2008</b>      | <b>104.4</b> | <b>102.8</b>  | <b>9.30</b>                |
| Q1 actual        | 97.8         | 96.3          | 8.74                       |
| Q2 actual        | 123.8        | 122.8         | 11.47                      |
| Q3 actual        | 118.2        | 117.2         | 8.98                       |
| Q4               | 77.8         | 75.1          | 8.00                       |
| <b>2009</b>      | <b>105.2</b> | <b>103.6</b>  | <b>7.70</b>                |
| Q1               | 91.3         | 89.3          | -                          |
| Q2               | 99.2         | 97.7          | -                          |
| Q3               | 112.0        | 110.4         | -                          |
| Q4               | 118.0        | 116.7         | -                          |
| <b>2010</b>      | <b>126.1</b> | <b>121.3</b>  | <b>8.00</b>                |
| <b>2015</b>      | <b>137.0</b> | <b>135.5</b>  | <b>10.50</b>               |

## History

|      |      |      |      |
|------|------|------|------|
| 1985 | 27.9 | 27.5 | 2.60 |
| 1986 | 15.1 | 14.4 | 1.71 |
| 1987 | 19.2 | 18.4 | 1.53 |
| 1988 | 16.0 | 15.0 | 1.71 |
| 1989 | 19.6 | 17.7 | 1.77 |
| 1990 | 24.5 | 23.3 | 1.70 |
| 1991 | 21.5 | 19.9 | 1.53 |
| 1992 | 20.6 | 19.3 | 1.73 |
| 1993 | 18.5 | 17.2 | 2.11 |
| 1994 | 17.2 | 15.9 | 1.94 |
| 1995 | 18.4 | 16.9 | 1.69 |
| 1996 | 22.0 | 20.3 | 2.50 |
| 1997 | 20.6 | 19.3 | 2.48 |
| 1998 | 14.4 | 13.3 | 2.16 |
| 1999 | 19.3 | 18.0 | 2.32 |
| 2000 | 30.3 | 28.5 | 4.32 |
| 2001 | 26.0 | 24.9 | 4.05 |
| 2002 | 26.1 | 25.0 | 3.37 |
| 2003 | 31.0 | 28.5 | 5.49 |
| 2004 | 41.5 | 38.0 | 6.18 |
| 2005 | 56.7 | 55.3 | 9.48 |
| 2006 | 66.2 | 66.1 | 6.98 |
| Q1   | 63.5 | 62.7 | 7.84 |
| Q2   | 70.7 | 70.4 | 6.65 |
| Q3   | 70.5 | 70.7 | 6.18 |
| Q4   | 60.2 | 60.6 | 7.24 |
| 2007 | 72.4 | 72.7 | 7.12 |
| Q1   | 58.2 | 58.6 | 7.19 |
| Q2   | 65.0 | 68.6 | 7.65 |
| Q3   | 75.1 | 74.6 | 6.24 |
| Q4   | 90.5 | 88.5 | 7.39 |

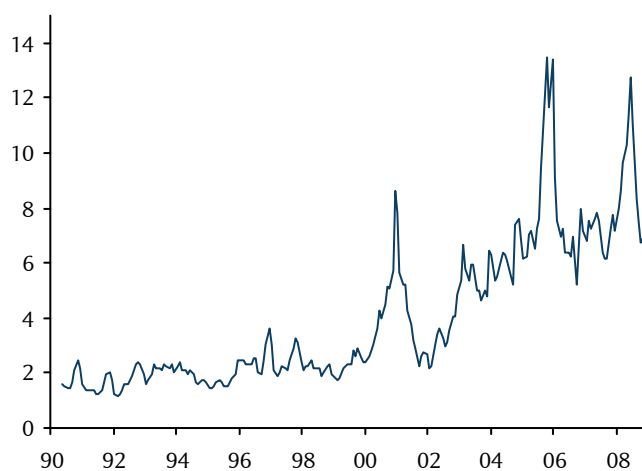
## Value of OPEC basket of crude oils, 1999-2008 (\$/b)



## WTI monthly averages 1983-2008 (\$/b)



## Gas futures monthly averages 1990-2008 (\$/mmbtu)



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