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Crunch time

Integrated producers and those with access to advantaged feedstock are well placed to cope with the current high oil price environment and the looming industry downturn

BY PAUL HODGES

ARE TODAY'S oil prices firmly based on supply and demand factors? Or are they instead driven by hedge funds and financial speculation? OPEC members, of course, have sound reasons for blaming speculators, as this diverts any blame to others. But are they right to do so?

A glance at chart 1 suggests two factors may be at work. It shows Brent crude prices since January 2002 in €/bbl and \$/bbl. One can see that they were virtually the same at around €20/bbl/\$20/bbl in early 2002, and continued in close alignment until the middle of 2003, when dollar prices began to climb. Since then, the gap has grown.

Over the entire period, euro prices

have risen by 220% since January 2002, from €22/bbl to April's average of €70/bbl. But in dollar terms, they have risen by 420%, from \$19.50/bbl to \$110/bbl. Clearly, therefore, weakness in the dollar has played an important part in boosting dollar prices. But equally, the rise in euro prices is still alarming. Analysis suggests that this rise has been due both to supply and demand factors.

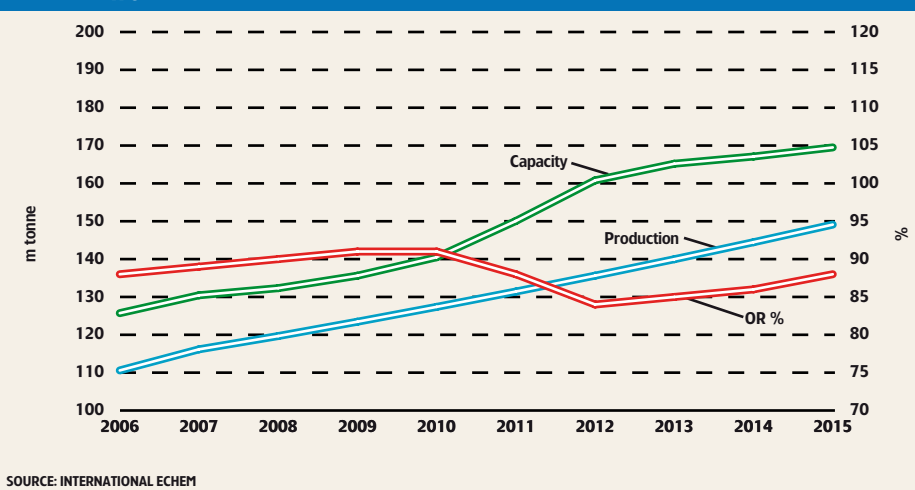
According to the Paris-based International Energy Agency (IEA), oil demand has risen by 11% between 2000 and 2007, or 8.8m bbl/day. And the IEA expects it to rise by a further 8.5% by 2012 to 95.8m bbl/day. This increase will come mainly from Asia and the OPEC countries. This year,



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ETHYLENE WORLD



SOURCE: INTERNATIONAL ECHEM

» for example, is expected to see 390,000 bbl/day growth in China, 150,000 bbl/day in Saudi Arabia, a further 330,000 bbl/day in other Middle East countries, and 140,000 bbl/day in India. The common characteristic of all these areas is a relatively young population, rising incomes, and subsidised oil product prices.

On the supply side, Russia has been a major player, as its production ramped up from 6.2m bbl/day in 1999 to 9.6m bbl/day in 2006. This year, Brazil is expected to supply an extra 300 kbpd, and Azerbaijan 175 kbpd. But senior Russian oil industry figures now expect output to plateau. And other sources of non-OPEC supply have been declining faster than expected in recent years. Many fields, such as those in the North Sea and Mexico, seem to be reaching the end of their lives, causing the drop-off in their output to accelerate.

There is also a growing problem in finding more oil. The six major western oil companies (ExxonMobil, Chevron, and Conoco Phillips, all US, Total of France, the Anglo-Dutch Shell and the UK's BP) are expected to spend \$100bn (€64bn) on exploration and production this year. But this massive increase is being partly absorbed by rising costs, which US-based investment bank Lehman Bros estimates have increased by 400% since 2000. At the Kashagan field, in Kazakhstan, for example, costs have doubled to \$136bn, and production is still eight years behind schedule.

The US National Petroleum Council has also pointed out that western oil companies no longer have access to many of the world's known oil reserves. In 1970, they could access 85% of reserves, but this figure was down to just 7% by 2005, as many countries nationalised their oil fields. OPEC owned 76% of proven global reserves in 2006, and Russia another 7%.

As a result, there is a growing conflict of interest. Western oil companies want to produce oil now, to meet the needs of western

consumers. But OPEC countries increasingly prefer to keep the oil in the ground, to benefit future generations. As King Abdullah of Saudi Arabia told the official Saudi news agency in April, "I keep no secret from you that, when there were some new finds, I told them: 'No, leave it in the ground, with grace from God, our children need it.'"

At the moment, of course, OPEC countries benefit both ways. A tight supply/demand balance has led to rising prices. And because they are keeping supply tight, they are preserving more of their reserves for future consumption. So while it is fashionable to blame 'financial speculators' for today's high prices, it seems hard to justify this claim.

Equally, of course, much of the Middle East's oil is produced along with associated gas that contains ethane. This is going to give Middle East petrochemical producers a major advantage over the next few years. Ethane is priced at \$0.75/m Btu in the Kingdom, and at similar prices elsewhere in the Gulf. This enables the production of polyethylene (PE) at less than \$400/tonne on a delivered basis into Asia.

Yet the ICIS weekly PE Pricing report estimates that the equivalent naphtha-based producer has a cost of around \$1,700/tonne, based on naphtha at \$1,000/tonne and co-product prices that prevailed in mid-May. This cost advantage is going to become critically important for Middle East producers as overcapacity starts to develop, even if they are using ethane/LPG feedstock mixes, rather than just ethane. We estimate that global operating rates for ethylene will drop to 84% by 2012, before demand growth starts to catch up with supply growth again, as shown in chart 2.

PART OF THE PICTURE

But these global operating rates probably tell a misleading story. We forecast that Middle East ethylene capacity will rise from 12.6m tonnes in 2006 to 29.2m tonnes in 2012, after allowing for likely engineering delays. With high levels of ethane feed, there is no reason for Middle Eastern plants to cut back production if prices begin to slip under the influence of oversupply.

At the same time, of course, China is expanding its own capacity. This will also probably run at normal operating rates, as a result of the government's policy of pursuing self-sufficiency. The new crackers are often integrated with refineries, so any production cutback would immediately reduce gasoline output and other critical products. So logic dictates that most of the new production in the Middle East and China will run at maximum operating rates. In turn, this will reduce average operating rates in other regions.

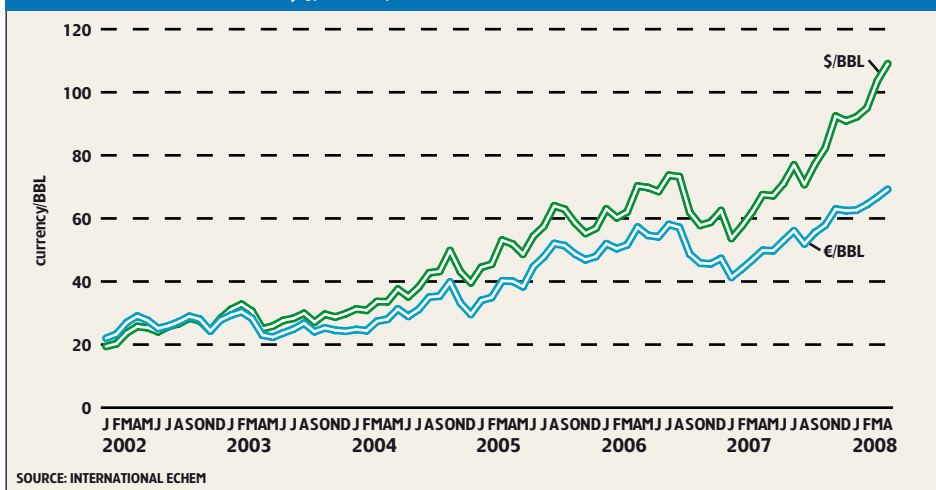
This will be quite a different experience from previous downturns in 1980-1985 or 1990-1994, when most producers had similar operating costs, and chose to cut operating rates on a global basis. Instead, producers

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BRENT PRICES 2002 TO 2008, \$/bbl & €/bbl



» outside the Middle East and China will face a double hit. Margins will reduce not only because of overcapacity, but also because of much lower operating rates.

SLOW TO REACT

The high level of integration within the petrochemical industry means that the larger companies are very slow to shut down polymer plants if prices slip. Instead, they move to roll-through pricing, based on the opportunity to generate a margin on an integrated basis, say, between a cracker and a polymer plant; or even, if things get really bad, between a refinery and an associated petrochemical complex.

In today's high oil price environment, feedstock optimisation, rather than product differentiation, will therefore be the key to industry profitability.

The impact of this on the petrochemical industry, and its customers, is likely to be profound. We are just completing a major new

study on this subject, entitled Feedstocks for Profit, and our analysis has led to a number of important conclusions:

- Petrochemical profitability is likely to change dramatically over the next few years. Until recently, strong demand had meant that the highest-cost plant essentially set the market price for everyone else, resulting in strong profits all round. But once supply moves ahead of demand, this virtuous circle turns vicious.

- Instead, integrated producers will compete on the basis of roll-through margins. Cracker operators don't always find it easy to shut down, just because PE or polypropylene (PP) prices have fallen below their own break-even cost.

- Their real alternative depends on the 'make-buy' option. This means comparing current margins with the net result of selling the feedstock in the open market, and purchasing polymer to cover supply commitments. The cost of inbound and outbound freight also has to be included.

- Non-integrated producers will therefore face a major squeeze in these circumstances. They have no upstream margin from crude oil production or refining to support them.

- Customers can also face problems if they are dependent on loss-making producers. Supply can become unreliable, as sellers seek to optimise their operations by minimising contractual volumes and abandoning traditional rebates.

The coming industry downturn will therefore probably lead to a polarisation between two main types of producers. There will be those who have access to advantaged feedstock in the Middle East, and those who have a strategic national drive, as in China, to run their plants at maximum rates. Equally, there will be those for whom it will be better to run than to shut down, based on the make-buy option. Those in the middle may well get badly squeezed.



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