ABSTRACT

Signs appeared in mid-2008 of relief from market strains that had elevated prices of crude oil and petroleum products to extraordinary levels. Global inventories of crude and idle production capacity available in the leading oil-exporting nations remain low. But major projects in the Middle East and Africa will bring new production capacity on stream in the second half of 2008 and in 2009. Global consumption growth is decelerating. These developments will ease price pressure unless supply sustains a major disruption. In the US, oil consumption is falling and oil production, rising. An emerging concern is supply of highway diesel.

INTRODUCTION

A long-awaited turning point began to appear in the global oil market in the middle of 2008. Prices of crude oil had reached extraordinarily high levels in the vicinity of $140 per barrel by mid-2008 in response to a combination of fundamental and extraordinary forces. The fundamental forces of supply and demand had begun an important transition as early as 1999 as persistent demand growth tested with growing intensity the ability of the supply system to expand, eroding a surplus that had suppressed prices for most of the preceding two decades. The extraordinary factors that exacerbated price pressures in 2008 included unusual weakness of the US dollar against other major currencies and a rush of investment funds into commodities as global financial turmoil elevated the apparent risk of other asset classes. By mid-2008, when Oil & Gas Journal published its annual Midyear Forecast, all the factors in the remarkable levitation of oil prices showed signs of reversal.

GLOBAL MARKET TRENDS

Global oil demand traditionally has followed economic cycles. It now, however, receives less-cyclical boosts from rapid industrialization in parts of the developing world and population expansion. Since about 2000, however, it has challenged the supply system’s physical limits. During that period, moreover, supply has encountered shocks: strikes that all but idled oil production sequentially in Nigeria and Venezuela during 2002, the invasion of Iraq in 2003, and hurricane damage to oil industry operations in the Gulf of Mexico and on the Gulf Coast in 2004 and, especially, 2005. With demand growing relentlessly, price pressure already was building. Supply disruptions accelerated the process.

These developments squeezed the oil market’s two important “cushions”: inventories and spare production capacity. When supply disruptions occur, the market turns to its cushions for replacement volumes. Inventories of course fluctuate but since 2000 have tended to be low, especially in terms of forward cover (the number of days that withdrawals from inventory can cover demand at expected levels of consumption).
general, inventories represent promptly available but limited emergency supply, while idle capacity can take longer to bring to market but is, once flowing, more durable. With minor exceptions, all spare production capacity is controlled by a few members of the Organization of Petroleum Exporting Countries, dominated by Saudi Arabia, which has a longstanding policy of holding idle 1.5 million barrels per day of capacity with which to meet unexpected surges in demand or drops in supply.

Except in periods of unusually high inventories, such as the late 1990s, the market has become very reactive whenever spare production capacity has fallen below levels equivalent to conceivable supply disruptions. The minimum comfortable level of spare capacity seems to be about 2 million barrels per day – roughly the production rates of troublesome exporters such as Nigeria and Venezuela. According to data from the US Energy Information Administration, spare capacity – all of it concentrated in a few members of the Organization of Petroleum Countries – has been above 2 million barrels per day in only one year since 2003, and then – in 2007 – only slightly. This condition goes a long way toward explaining why crude oil prices have tended to jump at every hint of geopolitical tension in the Middle East or tropical weather in the Gulf of Mexico.

Also during this period, production growth outside members of OPEC has consistently underperformed expectations and fallen below demand growth. The result has been growing pressure on OPEC to meet the market’s requirements. This condition, too, puts upward pressure on the price of crude oil, especially when OPEC underestimates global crude needs or trims output in response to what its members perceive to be unwarranted stockbuilding. The market is said to be “tight” under these conditions, with inventory forward cover below average, with non-OPEC supply growing more slowly than demand, and with OPEC’s spare production capacity barely sufficient to cover supply interruptions as large as the market recently has experienced.

When these fundamental conditions prevail and demand continues to grow, oil prices rise. They rise even more when scared money seeks haven in commodities and when the dollar, the currency under which most oil is traded globally, loses value.

The extraordinary components of recent oil-price elevation could not last. By July, indeed, the dollar was strengthening and investment markets were rebalancing, notwithstanding continued troubles in housing finance. More importantly, as the extraordinary forces subsided, market fundamentals began to realign. Signals of the realignment appeared in OGI’s Midyear Forecast.

Using data from the International Energy Agency (IEA), OGI lowered its projection of global demand growth for all of 2008 to 0.9% from the 1.8% foreseen at the beginning of the year. And even the diminished midyear outlook may prove to have been high. All of the year’s demand expansion will occur in the nonindustrial world (countries not belonging to the Organization for Economic Cooperation and Development, or OECD). Among members of the OECD, demand will be down a forecast 1%. Some of the non-OPEC demand growth results from industrialization and population growth and therefore defies normal cyclicality. But oil consumers in many countries of the nonindustrialized world have been shielded from high prices by government subsidies and thus have experienced less pressure to conserve than their counterparts elsewhere. This factor of demand buoyancy is destined to change.

By mid-2008, subsidies were beginning to unravel as governments, especially those in countries that do not export oil, yielded to the fiscal strain of maintaining oil
price subsidies. While politically very difficult to implement, relaxation of subsidies was in fact happening by mid-2008 in parts of Asia and the Middle East. With consumers in these areas set to share the sting felt elsewhere from high oil prices, consumption was sure to contract.

While demand growth was easing worldwide, the supply outlook at midyear was brightening. In recent years, supply growth both in and outside OPEC has fallen below expectations for a number of reasons, large among them project delays occasioned by shortages of materials and labor. In mid-2008, large production projects expected onstream in 2007 or even earlier finally were ready to start. An important example is giant Khursaniyah oil field in Saudi Arabia, which had been scheduled to start up late in 2007 but, at this writing, looked set to go on production in September. The field will add 500,000 barrels per day to Saudi Arabia’s production capacity.

With Khursaniyah and other projects expected on stream in the Middle East and Africa by yearend, the IEA expected total OPEC production capacity for 2008, net of natural declines in existing fields, to grow on an annual average basis by a very important 600,000 barrels per day. Further increases are expected in 2009. For the market, these increases in supply are crucial. In June, the IEA had estimated spare OPEC production capacity, excluding amounts likely to be inaccessible in politically unstable Venezuela, Nigeria, and Iraq, at a dangerously low 1.95 million barrels per day, a figure it lowered to 1.7 million barrels per day in July.

Absent further project delays, the turnaround will be dramatic. In August, the U.S. EIA, like the IEA, estimated average annual spare OPEC production capacity at less than 2 million barrels per day. For 2009, it projected a rebound to above 3 million barrels per day, the highest level since 2002 and above the 1997-2007 average of 2.9 million barrels per day.

The non-OPEC supply outlook is improving as well. In its July Oil Market Report, the IEA projected non-OPEC supply growth in 2009 of 600,000 barrels per day, just 200,000 barrels per day less than its forecast for consumption growth. Another symptom of market tightness – the excess of consumption growth over expansion of non-OPEC supply – thus looks set to ease.

Price effects of the mere beginnings of this market turn have been impressive. Between mid-July and early August, the price of benchmark crude oils fell by $30 per barrel. That the market seemed convinced of the change in fundamentals was evident in the failure of Russia’s August invasion of Georgia, which is transited by important oil and gas pipelines from the Caspian Sea, to lift crude prices much if at all. Earlier in the year, when analysts were asking when crude prices would reach $200 per barrel, such jeopardy to nearly 1 million barrels per day of oil movement would have created panic buying and might have made $200-per-barrel expectations, at least momentarily, come true.

**U.S. MARKET TRENDS**

In the United States, oil demand will be down in 2008 following a year of negligible growth. Clearly, high prices of oil products have induced conservation, and a stuttering economy is taking its toll. Oil & Gas Journal’s Midyear Forecast projects a
2.2% decline in oil demand this year, with consumption down in all product categories. At the beginning of the year, OGJ had projected a demand decline of only 0.6%.

Supplies of biofuels, promoted by federal and state tax subsidies and volumetric mandates, are increasing. Ethanol consumption in 2008 will be at the mandated level of 587,000 barrels per day or slightly more. This is 6.4% of the gasoline market (estimated this year at 9.2 million barrels per day) by volume and about 4.5% on an energy-equivalent basis. Mandates for grain ethanol in gasoline grow each year for the next several years.

A potentially troublesome product is highway diesel fuel, which since mid-2006 has been subject to very low limits on sulfur content. Demand for so-called ultralow-sulfur diesel (ULSD) is growing even though consumption in the “distillate” category of which it is part will fall slightly this year. While the economic slowdown and price pressures suppress diesel use, offsetting growth will continue in several new consumption categories. One of these is transportation related to ethanol, which cannot be blended with gasoline and moved via pipeline. With ethanol consumption climbing as mandates phase in, the related logistics, based on truck and rail, will have to expand. Meanwhile, the ultralow-sulfur content requirement will be extended in phases through 2012 into currently exempt categories such as nonroad transport and small refiners.

So far, U.S. refiners have been able to meet requirements for ULSD after having invested heavily in the necessary equipment and catalysts. Domestic supply is in fact more important for diesel than it is for gasoline. With gasoline, the U.S. has a ready buffer supply available in Europe, where the product exists in nearly perpetual surplus. It was European supply, in fact, that averted a gasoline supply disaster when Hurricanes Katrina and Rita idled as much as 30% of U.S. refining capacity in 2005. Diesel is much less readily available from Europe, which must import the product and its precursors from Russia.

Adequacy of supply of ULSD thus depends greatly on the ability of U.S. refiners to turn out the product. Recent announcements of plans by major refiners for new hydrocrackers and desulfurization units provide some comfort. Still, the cost of making diesel for highway transport is much greater than it was before 2006, and supply flexibility is restricted. These pressures are evident in the relationship of diesel and gasoline prices. Although prices of both fuels rise and fall with the price of crude oil, diesel now sells at wholesale and retail at a significant premium to gasoline most of the time, a reversal of the pattern prevalent before 2006.

Biodiesel will not be an important supplement to diesel supply. Biodiesel plants are tiny. With the government offering a tax credit of as much as $1 per gallon, biodiesel can be very good business for entrepreneurs with access to cheap feedstock. No matter how many of them come on stream, however, their total output will not represent more than a small fraction of the diesel market.

An important question for the U.S. is whether its subsidization of biofuels moves the country toward its goal of diminishing reliance on foreign oil. So far the answer seems to be no. According to OGJ’s Midyear Forecast, total oil imports indeed will be down in 2008. But the decline in total oil demand and an expected increase in domestic production account for all of the change. Increased consumption of diesel and other oil products associated with the production and transport of ethanol and biodiesel seems to be offsetting ethanol’s contribution to the gasoline pool.
A bright spot in the outlook for U.S. energy supply is natural gas. OGJ’s Midyear Forecast sees a production increase of 5% this year following increases in the previous two years. Until recently, gas forecasts assumed that U.S. producers could at best keep supply from falling because of rapid declines in existing fields, especially offshore. But supply from unconventional onshore reservoirs – low-permeability (“tight”) sands, shales, and coalbeds – is roaring into the market as producers apply horizontal drilling and new completion technologies to the associated production challenges.

In large measure because of production gains from unconventional reservoirs and from fields in very deep water in the Gulf of Mexico, imports of natural gas, including of liquefied natural gas (LNG), have fallen below expectations of just a few years ago.

CONCLUSION

All forecasts of the oil market come with a condition: the absence of surprise interruptions to supply. This forecast is no exception. Yet, as the world has seen many times, cataclysmic disruptions do happen.

The market nevertheless is turning. Oil demand growth is subsiding worldwide and has disappeared in the U.S. and some other industrialized countries. Important, overdue increases in supply are in prospect. And dollar weakness and the commodity-investment surge—which aggravated the price effects of a market that remained very tight until mid-2008, seem to have subsided.

The obvious question is how far crude oil prices will fall if there are no supply shocks. No one knows, although opinions on this subject are never difficult to find. It is safe to assert that a new price support level probably is in place at some distance above its ambiguous predecessor. Its determinants include production costs, which have leapt in the past couple of years, and the revenue needs of OPEC most important producers, which also have risen in a continuation of a long trend.

REFERENCES


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ADDITIONAL SOURCES

A webcast covering Oil & Gas Journal’s Midyear Forecast more comprehensively can be viewed at no charge on Oil & Gas Journal Online. Go to www.ogi.com, scroll down to the “Webcasts” area of the home page, click the “More Webcasts” button, and select the Midyear Forecast webcast from the list that appears.
World and US oil and gas: Where’s the turning point?

Bob Tippee, Editor, Oil & Gas Journal
International Titanium Association
Las Vegas
Sept. 23, 2008
OGJ annual forecasts

☐ Forecast & Review
  ■ Jan. 21, 2008

☐ Midyear Forecast
  ■ July 14, 2008

Marilyn Radler, Senior Editor – Economics
Laura Bell, Statistics Editor
High crude prices: the reasons

- Fundamentals
  - Demand rising faster than supply can expand
  - Market’s “cushions” thin

- Extraordinary forces
  - Weak dollar
  - Rush of scared money into commodities
World oil demand (MMb/d)

2009: 87.7 (IEA July)

January:
+1.8%

Source: IEA except OGJ forecast for ’08.

OECD
Non-OECD
FSU +2.4%
China +6.7%
ME +4.6%
LA +5.4%
World demand: observations

- OECD demand down 1%
- Non-OECD demand up 3.3%
- GDP growth in Non-OECD oil exporters
- Subsidies in Asia, Latin America, Middle East
  - Lifting in much of Asia
  - Staying in much of L. America, Middle East
World oil supply (MMb/d)

87.4
+2.2%

*Plus other biofuels. Source: IEA
Non-OPEC supply (MMb/d)

Source: IEA; Note: Angola (1.7 MMb/d), Ecuador (0.5 MMb/d) joined OPEC in ’07.

2009: 50.6 (IEA July)
Yearly change: demand, non-OPEC supply (MMb/d)

2009 (IEA July):
Demand + .800
Non-OPEC + .600

Expected demand up 1.5 MMb/d in January

Expected non-OPEC up 1.1 MMb/d in January

Pressure on OPEC (MMb/d)

- Needed from OPEC in ’08 = 32.3
- May OPEC crude (IEA) = 32.3
- Group quota = 29.67
- May OPEC capacity (IEA) = 34.97
- Effective spare capacity (less Indonesia, Iraq, Nigeria, Venezuela) = 1.95 (1.7 in July IEA)
- Stocks low
OPEC’s spare capacity (EIA)

Note: Shaded area represents 1997-2007 average (2.9 million barrels per day)

Short-Term Energy Outlook, August 2008
OPEC production capacity in ’08

- **Saudi Arabia**
  - Change net of decline in MM b/d
  - +.200-.300 to 10.95*

- **Nigeria**
  - +.200-.300 to 2.16

- **Angola**
  - +.170 to 2.05

- **Algeria**
  - +.050 to 1.45 via EOR

**Total OPEC:**
- +600 Mb/d to 35.6 MMb/d
- (End-’07 f’cast: 35.8 MMb/d)

*Plan: to 12.5 MMb/d by end ’09; Source: IEA*
Summary: Global oil market

- Extraordinary forces waning
- Demand growth slowing
- Supply growth in prospect
- “Cushions” thickening
US product demand (MMb/d)

January:
-0.6%

20.25 -2.2%

Note: Before exports (1.55 MMb/d in ’08). Source: EIA for 2004-07
Gasoline, distillate demand (MMb/d)

Red line = ULSD

‘08 ULSD forecast assumes 80% of distillate

Source: EIA for 2004-07
Gasoline, ethanol use (MMb/d)

Source: EIA
ULSD, biodiesel use (MMb/d)

Source: EIA
Industry oil imports (MMb/d)

Top numbers: % of total US demand:

- 63.1
- 65.9
- 66.3
- 64.9
- 64.0

Imports down .48; demand down .45; liquids output up .06

Source: EIA for 2004-07
US total liquids production (MMb/d)

Source: EIA for 2004-07
US gas consumption (tcf)

Source: EIA for 2004-07
Marketed gas production (tcf)

Source: EIA for 2004-07
US gas imports (bcf)

Source: EIA for 2004-07
Summary: US oil market

- Oil demand down
- Gasoline demand down
- Diesel use rising; supply a question
- Ethanol use growing (mandate)
- Oil production, refining capacity rising
- Gas production zooming
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