NORTH SEA CRUDE OIL OUTPUT: PERSPECTIVES AND PRICE CONSEQUENCES

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For over a decade, and notably since the mid-2000s, OECD Europe crude oil production has slumped as a percentage of worldwide petroleum output. The majority of that European output issues from the North Sea. More importantly, yearly average European crude oil production has plummeted over that span. North Sea production includes a key international crude oil price benchmark, Brent and related other offshore crude streams.

North Sea/Brent does not merely capture trader attention and spark media headlines. Despite its diminishing physical supply role as a share of global production, despite its sharp absolute production drop, North Sea/Brent's marketplace power nevertheless is very important and extends around the globe. Why? The petroleum industry continues to price many other crude oils directly or indirectly relative to it. **North Sea/Brent has a greatly disproportionate influence on global crude oil pricing relative to its output.**

Moreover, not only has the barrel per day output of North Sea/Brent declined in recent years. Demand for the "high quality sweet" grades it represents remains substantial.

Consequently, all else equal, North Sea/Brent ("Brent") crude oil supply in recent years generally has become tight (low "free supply"). So all else equal, since Brent acts as a price guide for other crudes, its supply/demand situation thereby tends to boost global crude oil prices to and sustain them at "high" (or "relatively high") levels.

Brent's bottom at the depth of the worldwide economic crisis was $36.20 per barrel (12/24/08). Although it peaked 3/1/12 at 12840 (making a double top alongside the 4/11/11 and 4/28/11 plateaus around 12700), at over 11000 it still remains quite high.

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Everyone knows that global and regional refined products such as gasoline, distillates (diesel, jet fuel, heating oil), and residual fuel have their own supply/demand factors and price trends. Refined product prices relative to crude oil (crack spreads) obviously fluctuate, sometimes dramatically. However, refined product arenas are not divorced from the crude oil universe. Thus the relative tightness in North Sea crude oil to some extent helps to underpin and rally refined product marketplaces.

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This perspective of course does not imply that Brent prices never fall or that its supply availability (relative tightness, free supply) never changes. Various factors for the overall petroleum universe intertwine with those closely linked to the North Sea realm. Trends for other commodities such as base and precious metals (and commodities "in general") affect petroleum price levels and patterns. Assorted variables outside the petroleum battlefield also significantly influence Brent price levels and trends. Those outside include major interest rate, currency, and stock marketplaces. Many commodities, including Brent, have rallied (or sagged) alongside the S+P 500. Massive deficit spending, sustained low interest rates (picture Federal Funds and the US government yield curve), money printing (quantitative easing by the generous Federal Reserve and numerous other key central banks), and a weak United States dollar have helped to rally petroleum marketplaces and the S+P 500.

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The OECD represents so-called advance nations, including the United States. Focus on International Energy Agency statistics for OECD "Europe". Most oil production from that category is from the UK and Norway, presumably from various North Sea production streams. ("Annual Statistical Supplement with 2010 Data (2011 Edition)" Table 1, "Oil Market Report", December 2012, Table 1. Global supply includes natural gas liquids).

In 2000, European crude oil production was about 6.8mmbd, nearly equal to 1996's 6.7mmbd. By 2004, it eroded to 6.1mmbd. European oil output represented 9.2 percent of world supply in calendar 1996, 8.8pc in 2000, and 7.3pc in 2004.

Since 2004, European output continued its steady and sharp descent, as did its share of total world oil production. In 2005 it was 5.7mmbd (6.7pc of global supply), with 2006 at 5.3mm (6.2pc), 2007 five mmbd (5.8pc), and 2008 4.8mmbd (5.5pc).

In 2009, it was 4.5mmbd (5.3 percent). In 2010, it was only 4.1mmbd (4.7pc), with 2011's down even further to 3.8mmbd (4.3 percent of 88.4mmbd). **The IEA estimates 2012 at 3.4mmbd, down about 50 percent from the 1996/2000 heights and merely 3.7pc of global production** about 90.8mmbd (assume 4Q12 supply stood around that of the prior three quarters). Suppose total world supply remains flat in 2013, though this contrasts with the recent global trend. Thus with 2013 European production foreseen at 3.3mmbd, its marketplace share slips to 3.6pc. The US Energy Information Administration estimates are similar to the IEA's. It says "North Sea" output was just over 3.3mmbd for 2011, with 2012 and 2013 both around 3.1mmbd (Short-Term Energy Outlook, "STEO", 12/11/12, Table 3a).

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Compare North Sea crude output with OPEC's. According to the IEA, 3Q12 OPEC crude oil output was 31.5mmbd, with 31.2mm in November 2012 (Saudi Arabia 9.6mmbd).

North Sea output often falls seasonally during the third quarter due to field maintenance. It will be only 3.1mmb in 3Q13, about 3.4pc of world supply.

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Not only has Brent long been a major international benchmark crude oil. Arguably its guiding influence on petroleum pricing has grown in recent years. For example, the United States government switch from a domestic crude oil to Brent as its key oil reference price underlines this. The Energy Information Administration's "Annual Energy Outlook for 2013" ("Early Release Overview"; 12/15/12) embraces "light, sweet Intercontinental Exchange Brent crude oil ["Brent spot price"] instead of WTI crude oil traded on NYMEX". "This change was made to better reflect the price refineries pay for imported light, sweet crude oil and takes into account the divergence of WTI prices from those of globally traded benchmark crudes such as Brent" (pp 3, 5).

Brent substantially lifted its share in the S+P Goldman Sachs Commodity Index for 2013 at the expense of NYMEX WTI (11/5/12 announcement). This year, Brent captures over 22.3 percent of the broad GSCI, up almost four percentage points from 2012's 18.4pc (reference percentage dollar weight). WTI's share remains substantial, but its relative prominence drops precipitously, from 31.0pc in 2012 to 24.7pc in 2013. Brent's large and increased position within this prominent index underlines its significance and influence within not only the global petroleum territory, but also the commodity marketplace "in general" landscape.

Crude oil and refined products represent over sixty-seven percent of the widely-watched S+P Goldman Sachs Commodity Index. Their travels thus substantially influence the overall direction of this commodity marketplace weathervane and thus related inflation expectations.

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Alternative "investment" (buy and hold for some version of the long run) in commodities over the past decade generally has increased in popularity. Alternative investment in commodity marketplaces reduces "free supply", though marketplace wizards can debate how much. Use the CFTC's Index Trader data (net long position) for 12 agricultural commodities as an indicator for such investment holdings within the commodity complex in general. So from 2007 to the present, what has been the rough average for the net long position of the alternative investment crew in commodities, including that within the petroleum realm? It has been massive, at roughly twenty-five percent of total open interest. Some noncommercial players of course may elect to invest in a given commodity directly rather than via an index such as the GSCI.

Thus North Sea/Brent is a substantial investment vehicle. This alternative investment helps to support and rally Brent prices, as it has for other commodities.

Keep in mind that even apart from the alternative investment factor, the North Sea/Brent actual physical supply/demand situation increasingly has tightened in recent years. Consequently, alternative investment in North Sea/Brent, by exacerbating supply/demand tightness in that physical marketplace, has helped to propel and maintain North Sea/Brent prices "higher than they otherwise would be". In addition, since physical North Sea production has declined, growing investment demand for Brent probably has not satisfied by producer hedge selling of that or closely related grades.

Given North Sea/Brent's royal status within the oil arena, substantial and growing alternative investment in it generally benefits oil producers (whether sovereign nations or oil companies) and burdens petroleum consumers.

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Moreover, over the past few years, the petroleum industry probably shifted its inventory holding approach from a just-in-time method to a just-in-case vantage point. Imagine concerns about supply interruptions due to political unrest in the Middle East or elsewhere (Libya offers a recent example), the Iranian nuclear situation, and so on. In any event, this change increases the desired days coverage of inventory to be held (controlled), whether for refined products or crude oils. It thus reduces free supply for a given amount of physical supply. Given the declining output of North Sea/Brent, this move toward just-in-case inventory management especially helps to support and rally North Sea/Brent prices.

Suppose additional long hedging by oil consumers enters into the North Sea/Brent arena. Given North Sea/Brent's signpost relevance and tight supply situation, this influx can have notable price consequences.

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Increasing backwardation often reflects reduced actual free supply, or fears of such lower availability. Notable backwardation in Brent intramarket spreads partly reflects the increasingly tight supply/demand situation in North Sea/Brent crude oil.

The December 2013 less December 2014 Brent crude oil spread made lows at a negative $2.56 per barrel (December 2013 under December 2014; contango) and -204 on 5/21/10 (daily

settlement basis). This spread moved into backwardation and spiked higher in 2011 (assisted by the interruption of Libyan supplies). It peaked at 847 per barrel on 3/8/12, within one week of the Brent (nearest futures continuation) on 3/8/12.

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Compare the secular decline in North Sea crude oil output with recent US crude oil production trends. America's long-run crude oil production tumble ended around 2008.

According to the EIA, US total crude oil supply (including lease condensate) in calendar 2011 was 5.7mmbd, rising significantly in 2012 to 6.4mmbd, with calendar 2013 predicted at nearly 7.1mmbd. Total crude oil production was 5.4mmbd in 2009 and 5.5mmbd in 2010. Compare US 2011-13 output with that in 2008 and previous years. In 2008, it was only five mmbd. In 2000, US crude output was 5.8mmbd, down from 1996's 6.5mmbd and a sharp tumble from 1985's nearly nine mmbd. (Short-Term Energy Outlook, 12/11/12, Table 4a; Monthly Energy Review, 12/21/12, Petroleum Table 3.1).

The trend toward substantial widening of North Sea/Brent versus NYMEX WTI spreads in recent years reflects both the significant decline in North Sea crude oil output as well as noteworthy climbs in US domestic production. American crude oil infrastructure (pipeline transportation) considerations have encouraged WTI's relative weakness against Brent.

Take a look at the December 2013 contract Brent versus WTI crude oil spread. It made a key low at Brent $2.42 under WTI on 1/19/09 (settlement basis; not long after the major low in nearest futures Brent at 3620 on 12/24/08). Note the trend as oil prices in general and North Sea/Brent prices in particular rallied. For the December 2013 contracts, Brent advanced versus WTI, breaking above the spread's highs achieved in 2008 about 450/475 (Brent over WTI). It peaked initially on 9/7/11 at 1482 (Brent over). Though this December 2013 Brent less WTI relationship weakened to 454 on 12/30/11 (compare the 2008 highs), it established a second top at 1447 on 11/21/12.

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Obviously numerous supply/demand factors influence petroleum pricing. Yet given its benchmark status, North Sea/Brent's declining production (and increasing free supply tightness) has been a blessing to crude oil producers in OPEC, the United States, and elsewhere. The Financial Times (12/31/12, p1; referring to the EIA's "OPEC Revenues Fact Sheet", 12/21/12), emphasizes: "The Opec oil cartel, led by Saudi Arabia, will pocket a record of more than $1tn [trillion] in net oil [export] revenues in 2012 as the annual average price for Brent, the benchmark, heads to an all-time high [about $111.50 per barrel, annual average; above the previous record, set only the year before at $110.90] in spite of weak economic growth." And: "In real terms, adjusted for inflation, Opec's [net oil export] revenues in 2012 also were a record, surpassing the peaks set during the oil crises of 1973-74 and 1979-81."

Glance in further detail at some petroleum days coverage details in regard to this pricing perspective. OECD industry inventories at end third quarter 2012 represent about 59 days of forward demand (IEA, "Oil Market Report", December 2012, Table 5; 59.1 days for October 2012, p1). The range from 2010 to 2012 has been about 57 to 59 days. Based on longer run inventory history (say back to the mid-1990s), this days coverage total for 2010-2012 has been at least adequate, even allowing for a shift to just-in-case inventory management. Admittedly OECD inventories do not display the entire international scene (think of China and other developing nations). Nevertheless, what do lofty worldwide petroleum prices (especially for North Sea/Brent) alongside not only mediocre global economic growth, but also sufficient OECD

inventory suggest? It strongly hints that actual and sustained tightness in the North Sea/Brent sector and North Sea/Brent's benchmark role has helped significantly to boost worldwide petroleum prices in general and to sustain them at high levels.

High prices obviously tend to encourage bountiful output, and obviously someone pays for it. Thus the North Sea/Brent picture helps worldwide petroleum consumers to spend a noteworthy and arguably a premium price for crude oil in general and thus refined products such as gasoline and diesel fuel. Perhaps this situation helps to assure energy supplies from Saudi Arabia and other important producers. And many in America preach the benefits of energy independence. Sustained high oil prices certainly have encouraged recent US domestic oil production gains.

Economic and political observers should conjecture about the overall consequences resulting from the benchmark status of and physical supply tightness in North Sea/Brent (assisted by alternative investment). Anyway, suppose this situation elevates overall petroleum prices around the globe by around five dollars per barrel. Five dollars per barrel for oil production around 90.8 million barrels per day (2012 worldwide output) creates a mountain of money. Given that prices for North Sea/Brent reached record high levels despite "weak economic growth" and sufficient industry inventories (and ample government strategic stockpiles, at least in the OECD), arguably five dollars is conservative.

Focus on the American scene. US total products supplied for calendar 2012 (daily average through 12/21/12, EIA weekly statistics) are about 18.7 million barrels per day. At five dollars per barrel and 18.7 million barrels per day, that equals $93.5mm dollars per day, about $655 million per week, and around $34.0 billion per year. These numbers are not small. Look at them in terms of US federal budget deficits running around one trillion dollars per year, it equals about 3.4 percent of such deficits. Picture the costs in terms of after-tax dollars to the average American household.

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