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Middle East Crude Pricing and the Oman Crude Oil Futures Contract: A Critical Assessment.

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In June 2006, the Dubai Mercantile Exchange Limited (DME) announced the details of the Oman crude oil futures contract, the first to be established in the Middle East. Although the full details of the terms and conditions remain confidential, the key elements of the contract have been made public. The size of the contract will be 1,000 barrels to be settled daily at the close of the Singapore trading day. It will be based on physical delivery using Oman's crude oil storage and loading installations. Physical delivery requires a minimum position of 200,000 barrels, below which outstanding transactions will be settled on a cash basis. Petroleum Development of Oman (PDO) and DME will be responsible for delivery matching. The DME is seeking for transactions to be cleared through NYMEX. NYMEX holds 50% of DME while the other 50% is controlled by Tatweer, part of Crown Prince Sheikh Mohammad Al Maktum's Dubai Holdings.¹

The Omani crude oil futures contract is expected to be launched in the fourth quarter of 2006 subject to the necessary regulatory approvals. In order to operate in the Dubai International Financial Centre, DME needs to obtain a license as an 'authorized market institution' from the Dubai Financial Service Authority (DFSA). To operate as a remote clearing house NYMEX requires both the approval of DFSA and the US Commodity Futures Trading Commission. Given the parties and stakes involved, it is unlikely that regulatory barriers will obstruct the timely launch of the contract.

Efforts to launch the Oman crude oil futures contract have been received with enthusiasm by many market observers. The Omani Undersecretary of Oil and Gas Nasser bin Khamis al-Jashmi declared that "the creation of a successful, physically linked Middle East sour crude oil futures contract is a concept we sincerely support, given our role in the pricing of Middle Eastern crude". DME chairman Ahmad Sharaf announced that "we will seek to build on the valuable and long-standing relationship between Oman and Dubai to develop a Middle East sour crude oil futures contract".

¹ See "A future in crude for the Middle East", volume 11, issue #10, May 18, 2006 <http://www.gasandoil.com/goc/news/ntm62068.htm>; Gulf News, "Dubai Mercantile Exchange unveils details of Oman Crude Oil Futures Contract", June 2006 <http://archive.gulfnews.com/articles/06/06/13/10046532.html>

The Chief executive of the DME Gary King declared that the launch of the contract “has been strongly desired and recommended by the marketplace”.

There is little doubt that establishing a tradable futures contract in the region is desirable. The reliance on Brent and WTI futures contracts for price discovery is no longer ideal for Middle East crude oil sellers and their buyers, mainly Asian customers. The WTI and Brent benchmarks are useful for pricing sweet crude oil, less so, for pricing sour crudes which represent a large share of Middle Eastern crude oil exports. The reliance on Dubai spot market quotations for the 10 million barrels per day or so of exports to the Asia-Pacific region has posed serious problems as Dubai’s production has fallen sharply in recent years. The introduction of a new futures contract with the potential to constitute the basis of a new pricing mechanism represents a much needed step.

The main question is however: can a futures contract based on Omani crude efficiently perform the role of price discovery? In order to answer this question, it is important to look more closely at how the current oil pricing system operates; its main drawbacks and the recent shift to the futures market for oil price discovery and price setting. We can then assess whether the proposed Oman oil futures contract satisfies the necessary conditions for it to play the role of a benchmark in pricing Middle Eastern crude oil exports.

The Current Oil Pricing Regime and the Shift to the Futures Market²

Formula pricing constitutes the basis of the current international oil pricing regime. The formula used in pricing oil is straightforward: the price of a certain variety of crude oil is set as a differential to a certain marker or reference price. Specifically, for crude oil variety X , the formula pricing is: $P_X = P_R \pm D$ where P_X is the price of crude X , P_R is the reference or marker price and D is the value of the price differential. The most important element of formula pricing is the identification of the reference or benchmark crude. Brent, WTI and Dubai-Oman are the main crude oil benchmarks of the current oil pricing system. Nearly all oil traded outside America and the Far East is priced using Brent as a benchmark. WTI is the main benchmark used for pricing oil imports into the USA. Dubai-Oman is used as a benchmark for Gulf crudes (Saudi Arabia, Iran, Iraq, the UAE, Qatar and Kuwait) sold in the Asia-Pacific market.

In the early stages of the current oil pricing system which emerged in the period 1986-1988, crude oil was priced off the spot market quotations of these benchmarks (namely dated Brent, spot WTI and Dubai) as assessed by oil reporting agencies such as Platts and Petroleum Argus. In the last few years however, there have been some serious doubts about the ability of the spot physical market to generate a price that reflects accurately the margin of the physical barrel of oil. One of the main problems is that these markets have become very thin i.e. very little actual trading occurs in these crudes which makes the process of price discovery very difficult. This has been the direct consequence of a rapid decline in the volumes of production of the benchmark crudes. The Brent system witnessed a dramatic decline in production in the early 1990s. The co-mingling of the Brent system with the Ninian system at the end of 1990 alleviated this problem and the combined production from the Ninian and

² This and the next section partly draw on B. Fattouh (2006), “The origins and evolution of the current international pricing system: A critical assessment”, in R. Mabro (ed.), *Oil in the 21st Century*, Oxford: OUP.

Brent systems (still known as Brent) increased to around 900,000 barrels per day in 1992. Thereafter, the production of Brent fell to around 350,000 barrels per day in 2002. To avoid potential distortions and squeezing in the thin Brent market, Platts broadened its definition of Brent to include Forties (UK North Sea) and Oseberg (Norway) as of 10 July 2002. This new benchmark has been given the name BFO. The inclusion of these two grades increased the number of cargoes to around 60–70 cargoes per month.

The WTI has also witnessed a similar decline, with production reaching less than 400,000 barrels per day in 2002. This decline reflects a sharp fall in US crude oil production in the past few years. US total oil production in 2003 declined sharply from 10.6 mb/d in 1985.³ During 2003, the United States produced around 7.8 million barrels per day of hydrocarbon liquid of which 5.7 mb/d was crude oil.

The bulk of oil exported from the Middle East to Asia Pacific is priced using a combination of Dubai and Oman spot quotations as a benchmark. Initially, the benchmark only included crude oil produced in Dubai. Dubai became the main price marker for the region by default as it was one of the few Gulf crudes available for sale on the spot market. However, the volume of Dubai crude production has dropped from a peak of 400,000 b/d in the period 1990–95 to under 120,000 b/d in 2004, with production hovering around 100,000 b/d in 2005.⁴ In 2006, Dubai crude continued to fall and according to Petroleum Argus (10 July, 2006) Dubai is currently producing about 90,000 bpd i.e. around five cargoes each month, with only four of these cargoes traded on the spot market (the remaining cargo is shipped by the producer ConocoPhillips to its refineries).

Due to this rapid fall in Dubai's oil production, in 2001 Platts introduced Oman into the assessment mechanism. This counteracted the problem of low liquidity and effectively doubled the volume of crude oil in the Dubai-Oman benchmark for price assessment. The addition of Oman in the assessment of Dubai however has created problems of its own. Oman crude has lower sulphur content and higher gravity than the Dubai crude. The increase in demand for lower sulphur and higher gravity crude oil relative to heavier sour crude has widened the price gap between the two types of crude. Since September 2004, the Dubai-Oman markets have diverged with the spread between the two grades reaching \$2.80 per barrel in October 2004.⁵ As a result of this divergence, sellers have not been willing to supply the more expensive Omani crude into the Dubai contract. To counteract this problem, Platts decides to include Oman and Upper Zakum as alternative delivery into the Dubai bids with effect from February 1, 2006.

In March 2004, Platts introduced another innovation, the partials mechanism, to counteract the problem of Dubai's low trading activity caused by the rapid fall in Dubai's production. The partials mechanism has the effect of cutting the cargo into small parcels that can be traded. In the Dubai context, the smallest trading unit was set at 25,000 barrels. Since operators do not allow sale of cargoes of that volume, it meant that a seller of a partial contract would not have been able to meet his contractual obligation. Thus, delivery will only occur if both buyer and sellers trade

³ EIA (2005), United States Country Analysis Brief.

⁴ See Montepeque, J. (2005), 'Sour Crude Pricing: A Pressing Global Issue', *Middle East Economic Survey*, XLVIII (14), April.

⁵ Ibid

19 partials totalling 475,000 barrels. Any traded amount less than 475,000 barrels is not deliverable and should be cash settled.⁶ Trading however in the partials contracts have been in decline in recent months.⁷

The Shift to the Futures Market

The declining liquidity of the physical base of the reference crudes and the narrowness of the spot market has caused many oil-exporting and oil-consuming countries to look for an alternative market to derive the price of the reference crude. The alternative was found in the futures market. For instance, instead of using dated Brent for its exports to Europe, several major oil-producing countries such as Saudi Arabia, Kuwait and Iran rely on the IPE Brent Weighted Average (BWAVE) as the basis of pricing crude exports to Europe. The BWAVE is the weighted average of all futures price quotations that arise for a given contract of the futures exchange (IPE) during a trading day. The weights are the shares of the relevant volume of transactions on that day. This shift is quite important since it places the futures market, which is a market for financial contracts, at the heart of the current pricing system.

The shift to this new stage was justified by the perceived inadequacies of the spot market. Many have argued that the natural decline in oil production in Brent reduced overall market liquidity and hence increased the crude market's vulnerability to manipulation, distortions and squeezes. Another reason for shifting to the futures market for price determination is that a futures price is, after all, determined by actual transactions in the futures exchanges and not on the basis of some assessed prices by oil reporting agencies. Furthermore, the timely availability of futures prices enhances price transparency. At any time, a seller or a buyer, can look at the prevailing price and use it in spot and term contracts. The volume of daily transactions and open positions is additional useful information to gauge the liquidity of the market.

Thus, the move towards establishing an oil futures contract for pricing Middle East sour crudes can be seen as part of a more general shift in the international pricing system to the futures market for crude oil price discovery. This shift is seen by many observers as necessary to deal with the shortcomings of the spot Dubai market for price discovery.

But why not rely on the highly liquid WTI and Brent futures markets for price discovery and pricing Gulf oil exports to Asia? The answer is that neither of these two comes close to representing the type of crude oil in the region which is mainly sour. More generally, it is often argued that WTI and Brent no longer represent the marginal barrel of oil. For instance, according to a recent report by Eni, almost all of last year's increase in crude oil supply is of the heavy to medium sour variety and despite the fact that sweet grades will make their way to the market in the coming years, this trend towards sourer heavier slate is likely to continue. Furthermore, marginal refining capacity in the world cannot process heavy, sour crudes. The conversion of existing refining capacity to deal with this new reality is expensive and slow. Faced with this refining bottleneck and the increasing trend towards sourer and

⁶ Platts (2004), 'Review of the Partial Dubai and Oman Price Discovery Mechanism', Platts Discussion Paper, November. Downloadable from: <http://www.platts.com/Oil/Resources/Market%20Issues/>

⁷ Adrian Binks (2005), "Middle East Crude Pricing: The Dubai Debate", MEES VOL. XLVIII No 7, 14-February-2005

heavier slate, the relative demand for sweet oil continues to rise creating a large wedge between sweet crude and sour crude prices. This represents a fundamental change in oil markets; and pressures to change the world benchmarks to heavier more sour crudes have become paramount.

The Potential Role of Oman's Futures Contract

To what extent can the proposed Omani futures contract play an efficient role in price discovery? Will it gain market participants' confidence and attract enough liquidity for it to act as a useful benchmark in pricing sour crude oil in international trade? In order to answer these questions, we consider the following five aspects: the volume of Omani crude oil production, the diversification of ownership of Omani crude oil, the control of storage facilities, Oman's official pricing mechanism, and the willingness of Gulf Producers' to adopt the new pricing system.

Like the other benchmarks, production in Oman has also been in decline. Oman's total production which includes condensates and other liquids declined sharply from a peak of 972,000 barrels per day in 2000 to 754,000 barrels per day in 2004. In 2005, output recovered slightly and averaged around 780,000 barrels per day. This was mainly due to the introduction of additional EOR measures and increased production of natural gas liquids. Declining oil production however is not an urgent problem facing Oman; based on current levels of production, and assuming cargo sizes of 500,000 barrels, Oman can trade a large number of cargoes per month on the spot market. In fact, Oman's production is higher than that of Brent just before the comingling. However, it is important to note that what really matters from a pricing point of view is the volume available for spot trade. Here the picture is not very clear. Like all other exporters from the region, the Omani government sells part of its oil on the basis of long term contracts which by definition is not available for spot trading. Equally important, the Omani government recently announced that it will cut export volumes in order to supply its new refinery at Sohar. This will reduce the number of cargoes available for the spot market.

Low volumes of crude oil available for spot trading make price discovery quite problematic and increases the vulnerability of markets to squeezes, distorting prices and undermining market confidence. A squeeze refers to a situation in which a trader goes long in a forward market by an amount that exceeds the actual physical cargoes that can be loaded during that month. If successful, the squeezer will claim delivery from sellers who are short and will obtain cash settlement involving a premium. It is true that all markets are prone to squeezes and in the last few years there have been a number of occasions in which the Brent market was subject to successful squeezes. But it is also true that it is easier to squeeze thinner markets. Some observers have argued that in principle, there is no certain level of production below which the integrity of the market is threatened. Before its substitution by WTI, the Alaskan North Slope (ANS) continued to generate market prices although the physical base was very narrow. The prices were wholly derived from oil price reporting agencies' assessments of traders' perceptions about what the price would be if there were actual trade in cargoes. Thus, they argue an oil pricing system can survive without a physical base as long as there is confidence in it and so long as its existence is desirable. This argument however is unconvincing. Confidence is unlikely to survive for very long in these conditions. In effect, as markets become thinner and thinner, squeezes and

distortions become more widespread and as a result prices become less informative and more volatile thereby distorting demand and supply decisions.

The concentration of oil ownership and storage facilities is a prime factor affecting the success of certain crude acting as a benchmark. In order to understand why, let's examine the main factors that allowed Brent to take a privileged position within the current oil pricing regime. In the early 1980s the volume of production in the Brent market was quite large and ensured enough physical liquidity. But similar bases of physical liquidity could be found in other regions of the world, especially in OPEC which constituted (and still does) the largest physical market for crude oil to justify the choice of Brent price as a marker. Thus, the volume of production though important is not the determining factor for the choice of a marker. Horsnell and Mabro (1993) identify additional determinants, the most important of which is ownership diversification.⁸ The commodity underlying the forward/futures contracts should be available from a wide range of sellers and not from a single seller. Every country in OPEC is a single seller and hence OPEC crudes did not (and still do not) satisfy this criterion of ownership diversification. Monopoly of production also prevented the development of a complex market structure in other markets with a larger physical base such as Mexico. This is in contrast to the Brent market which has always been characterized by a large number of companies with entitlement to the production of Brent. The co-mingling of Brent with Ninian in 1990 and the development of new fields reinforced this and resulted in an even higher degree of ownership diversification.⁹

Omani crude oil production is almost totally controlled by PDO. There is an array of foreign and private domestic oil companies, but these constitute a small share of total oil output. In 2004, PDO average annual production amounted to 661,000 bpd which accounted for around 93% of the country's total crude oil production. PDO is owned by the Omani government (60%), Shell (34%), Total (4%) and Partex (2%). This structure has remained stable since 1977. As argued above, the dominance of one producer (in this case the PDO) increases the chance of manipulation and squeezes which in the long term may undermine the participants' confidence in the efficiency of futures markets for price discovery. This may partially be offset by the fact that PDO is a joint venture among various groups each with a certain entitlement to Omani crude production.

Monopoly of production increases the likelihood of manipulation, thereby increasing the risk exposure of buyers and traders who will therefore be reluctant to enter the market at all. In fact, it can be shown that if a dominant producer has enough market power, then even if market participants have rational expectations, the dominant producer has the incentive to destabilize the spot market and engage in destabilizing

⁸ See Horsnell, P. and R. Mabro (1993), *Oil Markets and Prices: The Brent Market and the Formation of World Oil Prices*, Oxford: Oxford University Press.

⁹ The WTI market is also characterized by a large number of independent producers who sell their crude oil to gatherers based on posted price. Brent however has additional advantages over WTI. First, Brent is waterborne and thus is not subject to problems of pipeline scheduling. Second, Brent is exportable which makes it more flexible to respond to the trading conditions in the western hemisphere (Horsnell and Mabro, 1993).

speculation in the futures market.¹⁰ More specific to this context, production should not be subject to manipulation or control by a dominant producer that could benefit in its trading positions from cutting and increasing production. Oman has no incentive to cut production and being outside OPEC it has no commitment to abide by production quotas. However, there is still some room for manipulation. For instance, by making fewer cargoes available in the spot market and selling more crude oil through long term contracts, it can affect both spot and long term contract prices. Given PDO's dominant position in production, this requires some sort of self-imposed regulation that prevents parties from using their market power to influence prices. The extent to which these self-imposed regulations are implemented will determine the success of the new futures contract in achieving its role of price discovery.

PDO's control of physical infrastructure compounds this effect. The fear of manipulating markets by controlling infrastructure applies even to very mature and highly liquid markets such as NYMEX WTI futures contracts. The challenge of the U.S. Federal trade commission to the BP Amoco-Arco merger in 2000 was partly based on the fear that by controlling the physical infrastructure, the WTI futures market can be squeezed. The Federal trade commission notes that 'the restriction of pipeline or storage capacity can affect the deliverable supply of crude oil in Cushing and consequently affect both WTI crude cash prices and NYMEX futures prices'. Then it states that 'a firm that controlled substantial storage in Cushing and pipeline capacity into Cushing would be able to manipulate NYMEX futures trading markets and they enhance its own positions at the expense of producers, refiners and traders'.¹¹ In Oman, the physical infrastructure is largely owned by PDO. The main oil terminal located at Mina al Fahal is operated by PDO. The terminal also includes nine crude oil storage tanks which are likely to be used for matching physical deliveries. The concentration of production, storage, and uploading facilities owned by one company increases the vulnerability of markets to squeezes and manipulation by that dominant player.

There is also the issue of Oman's official pricing mechanism. For the futures contract to have a realistic chance of working, it requires that Oman abandon its official pricing system. Having both an official price and futures market related price undermines the market function as price discoverer unless there is convergence in price. As noted by Petroleum Argus (June 19, 2006), "Oman crude is retroactively priced by the oil ministry and it is not clear how this system could continue to operate in parallel with Oman futures. Either Oman changes its pricing policy or the DME contract will fail". Earlier this year, Oman commented that it would continue to set official prices on a retroactive basis. However, according to Reuters, the country's oil minister Mohammad Al-Rumhhy has declared that he is willing to consider an alternative pricing system if market participants suggest a suitable alternative.

Finally, the success of the proposed futures contract depends, to a large extent, on whether Gulf producers are willing to set their crude price against it. So far, none of the big gulf producers such as Saudi Arabia, Kuwait, or Iran have shown great enthusiasm towards this new contract nor have they declared that they are considering

¹⁰ Newbery, D.M.G. (1984), 'The Manipulation of Futures Markets by a Dominant Producer', Chapter 2 in Anderson, R.W. (ed.), *The Industrial Organization of Futures Markets* (Lexington, MA: Lexington Books).

¹¹ United States of America Before Federal Trade Commission in the Matter of BP AMOCO P.L.C. and Atlantic Richfield Company downloadable from <http://www.ftc.gov/os/2000/08/bparco.pdf>

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altering their pricing policies. But this leaves us with an interesting question: If Oman's futures contract is able to replace the previous system of spot price quotations, what alternative do these Gulf producers have? They can always use Brent to price their exports to Asia, a system which, though not ideal, has at least been tested.

Conclusions

Establishing a sour futures contract based on Omani crude represents an important step in the recent shift in the international oil pricing regime in which oil prices are increasingly being determined by the futures market. The proposed Oman futures contract is in a good position to assume this role. However, the need for a sour contract to take into account the changes in the crude mix and refining bottlenecks does not mean that it will automatically succeed. There have been various attempts to launch similar futures contracts in the past but with limited success. As has been argued, the benchmark crude should satisfy a certain set of conditions otherwise it will not gain participants' confidence. Will this contract achieve the confidence required? Only time would tell.