

An analysis of crude oil price differentials and investment implications

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1 Introduction

Oil prices climbed to record highs in late October 2004 following a relatively steep general upward trend since early 2003. Ahead of the occupation of Iraq, OPEC reference basket price (ORB) set a local maximum at \$33.11 per barrel on March 10, 2003. It declined afterwards to a local minimum at \$23.27 per barrel on April 29, 2003, and then started a rather monotonic upward trend, staying all the time well above the upper end of the OPEC \$22-\$28 per barrel price band since December 2, 2003, registering an all-time high of \$46.61 per barrel on October 21, 2004.

Meanwhile, the gaps among the prices of crude oils of various qualities, that is, light and heavy, and sour and sweet, have also been gradually widening to unprecedented extents since early 2003. For example, the differential of average weekly prices of the benchmarks WTI and Dubai registered a local maximum at \$6.87 per barrel in the week ending March 7, 2003 and a similar high at \$6.84 per barrel in the following week, ahead of the hostilities in Iraq. The spread between WTI and Dubai then set local minimums at \$2.90 per barrel and \$2.29 per barrel in early May and late October 2003 respectively. The WTI – Dubai spread has been rising rather monotonically since November 2003 and with a much steeper slope since September 2004. The spread has set an all-time average weekly high at \$16.86 per barrel in the week ending October 22, 2004. As another example, the differential of average weekly prices of Saharan Blend which is a light-sweet crude and Arab Heavy which is a medium – sour crude set a local maximum at \$4.87 per barrel in the week ending 14 March 2003. It means that Saharan Blend was on the average \$4.87 per barrel more expensive than Arab Heavy during that week. The price spread then declined to a local minimum at \$-0.15 per barrel in

the week ending May 2, 2003. Since then, the price differential between these two crude oils has generally been on the rise and has gained further momentum since early July 2004 when oil price began a steep increase. By the week ending October 29, 2004 the spread climbed to its all-time maximum at \$18.04 per barrel.

The main purpose of this article is to explain the reasons behind the recent steep rises in crude oil price differentials. As these price spreads closely follow the trend in the actual crude oil prices, it is, as well, attempted to highlight some of the factors behind the recent developments in the crude prices. The article also examines the implications of these price developments on the investment decisions by refiners and producers, particularly by members of the OPEC.

Upon examination of the said topics, the article concludes that highly extended differentials are usually temporary and relatively short-lived phenomena. They could originate from fundamental factors such as imbalances in supply and demand of certain categories of crude oil or from non-fundamental factors such as geo-political concerns. The analysis of historical data demonstrates that the short-term spikes in differentials tend to gradually moderate and that in the long-term, the differentials are rather stable. The article also concludes that the current high differential environment provides an opportunity for the OPEC members to increase their share of the international crude oil market. This could be achieved by undertaking direct investment or encouraging other investors to invest in conversion facilities and sophisticated refineries capable of refining heavier and sourer crude.

The rest of this article has been organized as follows: Section 2 gives an account of some of the fundamentals of crude oil pricing in order to explain the origins of the oil price differentials. Historical data since 1990 are ex-

amined in section 3 to present a critical analysis of the longer term movements in crude oil price differentials. Section 4 reviews the developments in the oil market during the second half of 2004. An overview of the developments in the product market is presented in section 5. Section 6 covers an analysis of the world refinery situation. Current developments in the oil price differentials alongside investment implications are analyzed in section 7. Finally, section 8 presents some concluding remarks and suggestions.

2 The fundamentals

This section examines some of the fundamentals affecting crude oil prices to explain the origins of price differentials. It identifies the quality, the demand, the proximity to, accessibility by and marketability for the consumers as the three major sources of crude oil price differentials.

2.1 The quality

A large variety of crude oils with different qualities are produced in various regions all over the world. The quality of crude oil is measured by two popular parameters, i.e. the API gravity and the sulfur content.

A crude oil with higher API gravity is of a better quality and is lighter. In general, relatively larger quantities of lighter or more valuable petroleum products can be produced by refining lighter crude oil. A crude oil with API equal to or greater than 35 is called light crude. API gravity between 26 and 35 characterizes medium crude oils. Heavy crude are those with API gravity less than 26.

Similarly, better quality is associated with a lower amount of sulfur in a crude oil as this leads to easier and cheaper sulfur separation processes. Crude oils with less than 0.5% sulfur are called sweet. Medium sour crude oils contain about 0.5% to less than 1% sulfur. Crude oils with 1% or more sulfur are labeled as sour.

For example, the benchmark West Texas Intermediate (WTI), with API 40 and sulfur content 0.40%, is a light – sweet crude oil. The benchmark Brent, with API 38 and sulfur content 0.26% is also classified as light – sweet. The Dubai benchmark, however, is medium – sour crude with API 31 and sulfur content 2.04%. Among OPEC crude oils, the Saharan Blend from Algeria is an extremely light and sweet crude oil with API 43.60 and sulfur content 0.11%. Tapis, a Malaysian crude oil, is even lighter and sweeter with API as high as 45.50 and sulfur content as low as 0.02%. The Mexican crude oil Maya, with API 21.8 and sulfur content 3.33% is an example of a heavy – sour crude oil.

What is the quality mix of the actual world crude oil production? A review of the historical trend and pattern of world crude oil production during 1994-2003 shown in

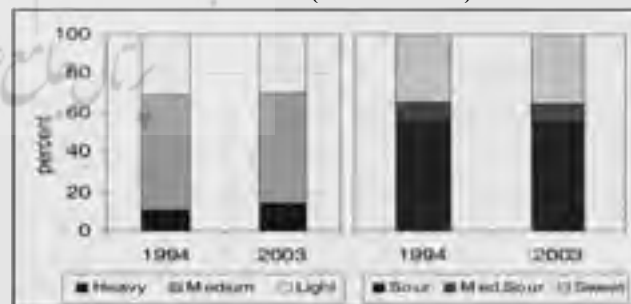
Figure 1 reveals that, at around 30 million barrels per day, medium – sour crude represent the largest share of global output, followed by light – sweet grades at under 20 million barrels per day. Despite slight changes, this trend has remained stable for at least the last decade up to 2003.

Figure 1: World crude oil production by quality (1994-2003)



Figure 2 shows the ratio of crude oil production by grade and indicates that medium crude represented the largest share of global output at about 56%, while light and heavy grades followed with close to 30% and 14% respectively. Compared with 1994, heavy crude has increased almost 3% in the last decade, while light and medium crude oils experienced a decline of just over 1.3% and 1.6% respectively. The breakdown of 2003 crude oil production by sulfur content suggests that sour crude represented the largest share of world oil output at over 54%, followed by sweet and medium – sour grades with about 36% and 10% respectively. For the period 1994-2003, medium – sour and sweet crude oils saw an increase of 1.2% and 0.4% respectively, while sour declined 1.6%.

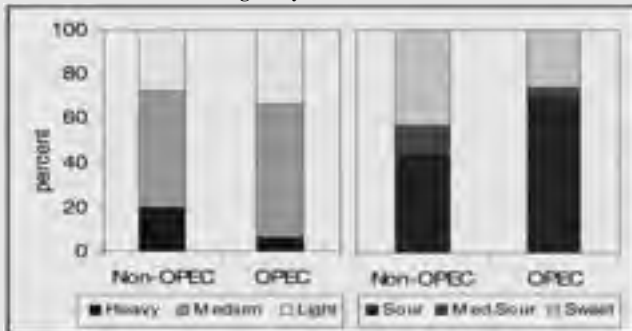
Figure 2: The ratio of world oil production based on API gravity and sulfur content (2003 versus 1994)



It is important to note that the above data covers global crude oil production in 2003, which represents 67.2 million barrels per day of 79.2 million barrels per day total world supply. It does not cover other contributors to the global oil supply, such as Natural Gas Liquids (NGL), non-conventional fuels and processing gains. OPEC crude oil production accounts for 27.0 million barrels per day of this figure, while non-OPEC represents the remaining 40.2 million barrels per day. Figure 3 shows

the breakdown of non-OPEC and OPEC crude according to quality.

Figure 3: The ratio of OPEC and Non-OPEC production in 2003 based on API gravity and sulfur content



2.2 The balance of supply and demand

The demand for the higher quality light-sweet oils is much higher than that for the lower quality heavy – sour oils. The reason is that the latter yield a larger proportion of premium products such as gasoline, gas-oil/diesel and jet fuel. These products comprise well above 60% of total world oil product consumption. The current quality mix of the crude oil supply, however, contains a high proportion of low quality crude causing an imbalance between demand and supply. This in turn leads to wider price spreads.

The recent implementation of more stringent oil product quality specifications such as average 90 PPM sulfur for gasoline in the USA and the expected implementation of similar measures such as 50 PPM for gasoline and diesel in the European Union as of the beginning of 2005 have contributed to further imbalance in the light – sweet and heavy – sour crude oil demand. Moreover, the main contributors to world oil demand growth in Asia, China and India, have also introduced euro II specifications which call for 500 PPM sulfur content for transportation fuel oil in 2004.

2.3 Proximity to, accessibility by and marketability for the consumers

Like in any other market, the transport costs, the accessibility and logistics, as well as the marketability play an important role in the oil market. The price of a crude oil is therefore affected by the cost of transporting it to the consuming locations, as well as by its quality and its demand level. If a crude oil is readily available or easily accessible, the so-called short-haul cargo, to a major consuming market, its price would be relatively higher compared with an even better quality crude oil which is produced in a geographically remote region, the so-called long-haul cargo.

As it is well known, the USA consumes more than 20 million barrels and imports more than 10 million barrels of oil per day, ranking first in both consumption and imports worldwide. We take three different

crude oils which are imported in this market and we look at their price differentials with the US benchmark WTI. The Mexican crude Maya had a \$14.08 per barrel average weekly differential with WTI in October 2004, whereas those of Saudi Arabian Arab Heavy and Arab Light were \$19.53 per barrel and \$14.32 per barrel respectively. Although Maya is an extremely heavy – sour crude oil with API 21.8 and sulfur content 3.33%, it has a relatively smaller differential with WTI compared to that of the better quality Arab Heavy with API 28.7 and sulfur content 2.79%. The heavy – sour Maya has even a marginally smaller differential with WTI compared with that of the much better quality medium – sour Arab Light with API 34 and sulfur content 1.78%. Table 1 presents the weekly average October 2004 WTI, Maya, Arab Heavy and Arab Light prices and differentials.

Table 1: Comparison of the October 2004 average weekly prices

Crude	Price in \$/barrel	Difference with WTI	
		\$	%
		WTI	53.32
Maya	39.23	-14.08	-36
Arab Heavy	33.79	-19.53	-58
Arab Light	39.00	-14.32	-37

What are the reasons behind the lower quality Maya being relatively more expensive in the US market compared with the higher quality Arab Heavy and Arab Light? Firstly, Maya is produced in Mexico, geographically closer to the US market, leading to lower transport costs and more accessibility. Secondly, Maya is more marketable because there are refineries and conversion facilities close by, dedicated to refining Maya and supplying the refined products to the US market.

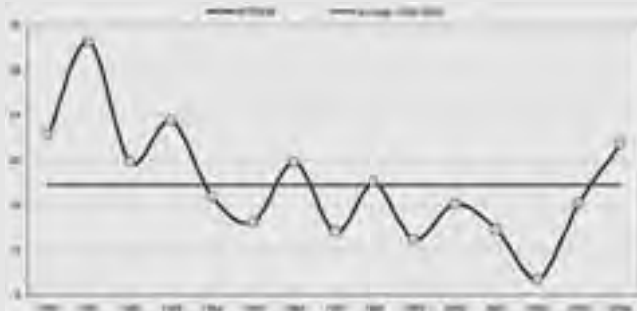
3 Long-term differentials

This section examines the long-term developments in the price differentials between the three benchmarks WTI, Brent and Dubai, as well as that between WTI and the medium-sour Arab Heavy crude oils. A historical set of average weekly prices from January 1990 through week ending 12 November 2004, a total of 776 observations, is the basis for the analysis.

In order to carry out a more realistic analysis, the price differentials have been calculated on a percentage basis rather than the absolute difference between the actual prices which are expressed in US dollars. This section first looks into individual differentials and then presents a combined assessment of the long-term trends.

Figure 4 demonstrates the average yearly differentials and the overall 1990–2002 average differential between the two famous benchmarks WTI and Dubai.

Figure 4: Average yearly percent spread between WTI and Dubai prices versus the 1990–2002 average



It is clearly seen that the differentials have a declining trend up to the year 2002. Then they make a sharp reversal. However, the average 2003 differential, 16.16%, is still below the historical 17.77% average. It is only in the current year, 2004, when the differentials up to the second week of November register an average 21.38%, climbing significantly above the historical average for the first time after 1996.

To sum up, one could say although the price differentials have widened significantly since early 2003 and dramatically since July 2004, they do not stand at their historical maxima. Talking in numbers, Table 2 summarized the relative price spreads for the period 1990–2002 and separately for the years 2003 and 2004.

Table 2: Percentage differentials in weekly average crude oil prices

Crude oil	Percentage differentials in weekly averages								
	1990–2002			2003			2004		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
WTI / Dubai	4.28	50.57	17.77	6.45	24.04	16.16	12.73	44.30	21.59
WTI / Brent	-6.32	33.01	7.77	1.08	18.81	7.80	2.68	33.97	8.16
Brent / Dubai	-9.40	39.26	9.26	2.22	15.41	7.70	3.36	36.54	17.29
WTI / Arab Heavy	-5.80	91.83	23.19	10.53	28.02	17.35	18.18	62.68	29.73

An econometric analysis on the long-term differentials, in fact, reveals that they are stationary. This means that crude oil prices – benchmark or otherwise – could be considered as a unique pool of inter-related streams which could randomly drift apart under special circumstances but basically stay together in the long-run; the current wider than normal price spreads are examples of the said random drifting.

4 Oil market developments

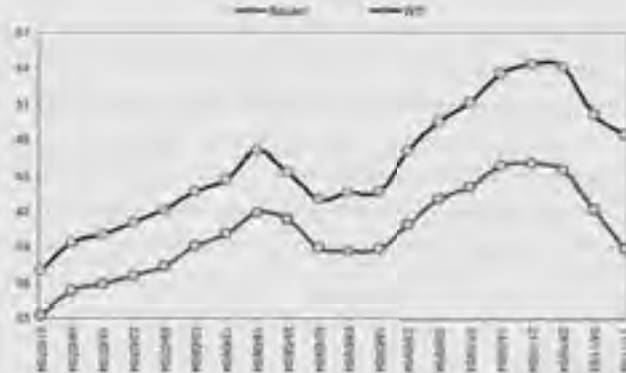
In order to gain a better understanding of the background to the current high differentials environment, this section examines, in detail, the geopolitical events and the crude oil price movements in the period July – November 2004.

The decision to increase the production ceiling to 26.0 million barrels per day was reaffirmed by the OPEC on 15 July. Ironically, increased OPEC output not only did little to ease prices, but indirectly pushed prices higher, as the market found a new factor to worry about: the decline in spare production capacity in OPEC members. When OPEC held its next meeting on 4 August, total OPEC output had reached well above 29 million barrels per day in July, with OPEC-10 production reported at around 27.5 million barrels per day, which was about 2 million barrels per day above the July ceiling. OPEC-10 production was expected to rise further in August, with total OPEC production, including Iraq, approaching a record 30 million barrels per day. Given the high levels of actual OPEC output, spare capacity in Member Countries had declined from a high of 20% of production in 2001 to less than 5% in July of this year. This concern helped push WTI as high as \$48.76 per barrel on 19 August and the OPEC Basket to \$43.16 per barrel on 20 August. The weekly WTI climbed to \$47.11 per barrel in the week ending 20 August while the weekly OPEC Basket registered a local maximum at \$41.94 per barrel in the same week (see Figure 5).

By the start of September, the high output levels of OPEC members were beginning to show up in commercial OECD stocks, which saw builds to near normal levels. Prices had eased somewhat, dropping to around \$38.62 per barrel for the weekly OPEC basket during the week ending on 10 September. In an effort to lower prices further, OPEC decided to raise the production ceiling by 1.0 million barrels per day to 27.0 million barrels per day, with effect from 1 November. This was seen as an effort to assure the market that supplies would be ample heading into the high demand winter season.

However, unexpected events at the end of the month reversed the downward price trends, sending the market to new highs in September. The price of the daily OPEC Basket reached a level of \$43.54 per barrel on 28 September, with the year-to-date average rising to \$34.66 per barrel, compared to \$27.91 per barrel in 2003. On the same day, the price of North Sea dated Brent hit \$47.09 per barrel, while WTI closed at \$49.90 per barrel, both all-time highs in the UK and US, respectively. This price increase was due to a number of events which appeared to threaten supplies such as unrest in Nigeria's oil-rich Niger Delta region; Hurricane Ivan, which substantially reduced production and refining operations in the Gulf of Mexico; the legal and supply woes of Russia's Yukos; and the continuing violence in Iraq, which had undermined attempts to return the country's oil production to pre-war levels. These factors were amplified by speculation in the oil futures market to levels well above those justified by supply and demand fundamentals.

Figure 5: Weekly WTI and OPEC Basket price in July-November 2004



The upward price trend continued until 21 October when the OPEC Reference Basket struck a new record high of \$46.61 per barrel, while the light – sweet benchmark crude oils WTI and Brent saw all-time highs of \$56.42 per barrel and \$51.91 per barrel respectively. However, not all crude price rises were equal, as a major characteristic of the market at this time was an increasing gap between light – sweet and heavy – sour grades. The differential between WTI and Brent and Dubai widened to \$17 per barrel for WTI and \$13 per barrel for Brent on 15 October, primarily due to tightness in the light – sweet market caused by the lingering impact of Hurricane Ivan on US Gulf Coast oil installations amid ample supplies of heavier and sourer crude grades from OPEC members.

Given the expected supply increase from Central Asia and the coming-on-stream of new desulphurization units, the unusually wide sweet – sour spread should narrow in 2005, but it will remain higher than in the last few years.

However, after making it into the record books, crude price trends reversed to fall later by with weekly WTI and OPEC Basket recording \$48.45 per barrel and \$38.87 per barrel in the week ending 12 November respectively. A number of factors were behind this steady decline in values. Strong output levels by OPEC had helped to produce a counter-seasonal build in OECD stocks at the end of the third quarter and US commercial crude oil stocks had risen to stand at healthy levels. At the same time, tightness in the sweet crude market eased with the recovery in US Gulf Coast output from Hurricane Ivan along with the increase in North Sea production following maintenance. Sensing a change in sentiment, speculators who had staked substantial long positions in light – sweet crude began to liquidate their holdings, causing a substantial drop in net longs to the lowest level seen this year.

It is important to note that while the difference between the weekly WTI and OPEC Basket was as low as around \$4 per barrel in early July 2004, it gradually widened to around \$10 per barrel by late October when the crude oil prices were at their historical peaks. Although the prices have reversed their upward trend since late October, the spread between the WTI and OPEC Basket has not narrowed and persists at around \$10 per barrel in early November 2004. Many observers believe

that the spread is highly unlikely to decline to its average historical levels in 2005 and the immediate beyond.

5 Product market developments

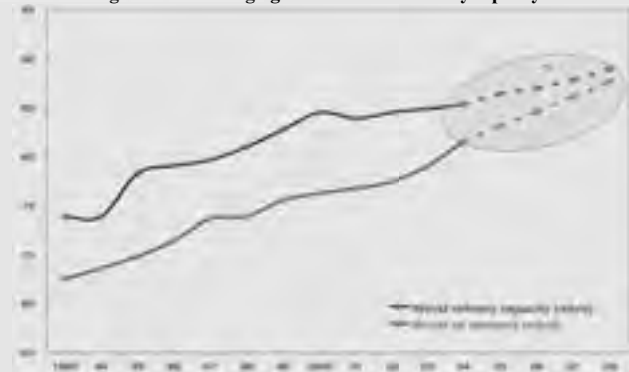
The products sector has played an important role in driving crude oil prices and price differentials to record levels in 2004. The products market has seen strong upward pressure due to high gasoline demand in early 2004, the introduction of stricter new product specifications in the USA, the switch from MTBE (methyl tertiary butyl ether) to RBOB (reformulated gasoline blend stock for oxygenated blending) for Reformulated Gasoline (RFG) in New York and Connecticut, and persistent supply constraints in tandem with unexpectedly high economic growth. The strong shift to the lighter end of the barrel caused the spread between light – sweet and heavy – sour benchmarks to widen.

Moreover, the year 2004 is recording a strong growth in the demand for light products, estimated at close to 2 million barrels per day, and representing close to 80% of the total incremental oil demand for the year. Meanwhile, refiners' preference for light distillate-rich crude increased by the end of the driving season in September; this was due to the need to build distillate stocks for winter. As a result, the price of light – sweet crude oils registered a sharp rise and the price spreads widened significantly.

6 World refinery situation

Tightness in the world refining capacity and the shortage in conversion capacity have both been instrumental in driving the crude oil price spreads to record highs. Total world refinery capacity is around 85.4 million barrels per day whereas world oil demand is estimated at about 83.5 million barrels per day in the fourth quarter 2004, very close to the maximum distillate capacity (see Figure 6). Furthermore, refiners usually have a preference for light distillate-rich crude oil rather than medium type crude oil in the fourth quarter, whereas there is no spare light crude oil production capacity. The market is also faced with a shortage of conversion capacity to produce light products from the immediately available sour crude oil.

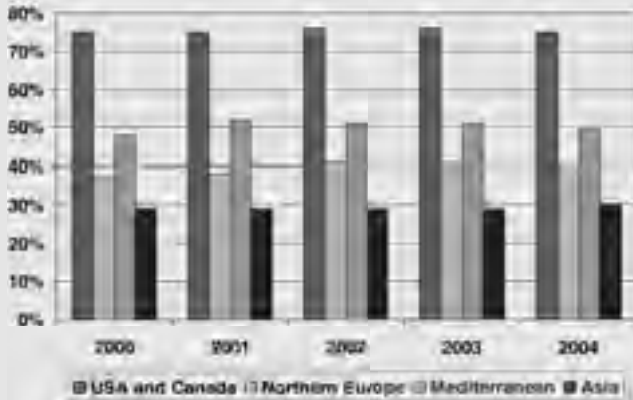
Figure 6: Increasing tightness in world refinery capacity



Moreover, as Figure 7 shows, world conversion facilities are generally inadequate. The latest data reveals that only 45% of the 85.4 million barrels per day of total refinery capacity

is equipped with conversion units which are able to produce premium products from medium type crude oil. For example, conversion facilities at Asian refineries, which rely mostly on pre-dominantly medium – sour crude oil imports from Middle Eastern OPEC members, stand at as low as 30% of total capacity.

Figure 7: Ratio of conversion to total refinery capacity (by region, %)



7 Developments in the oil price differentials and their implications on investment

As mentioned in section 3, the spread between the benchmarks WTI and Dubai had set its historical peak in 1991 and its historical low in 2002. Figure 8 presents the average weekly percent WTI – Dubai differentials in 2003-2004. Although the spreads started rising in 2003, especially in the volatile price environment in the first half of the year, their average, 16.16%, failed to surpass the 1990-2002 historical 17.77% average. The average spread rose to 17.44% in the first half of 2004, still marginally lower than the historical average. The period July-November 2004, however, witnessed a significant jump in the WTI – Dubai differentials which averaged 26.49%.

Figure 8: The percentage weekly WTI – Dubai price spread, per cent



The absolute weekly 2003-2004 spreads are shown in Figure 9. As shown in the figure, the average weekly 2003 WTI – Dubai spread was \$4.32 per barrel, higher than the \$3.13 per barrel historical 1990-2002 average. The year 2003, therefore, marks the beginning of an era of higher spreads. The aver-

age spreads in the first half of 2004 climbed further to \$5.40 per barrel, significantly higher than the historical average. The period July-November 2004 registered an unprecedented high average \$9.66 per barrel spread, greater than three times the historical 1990-2002 average.

Figure 9: The absolute weekly WTI – Dubai price spread, US dollars per barrel

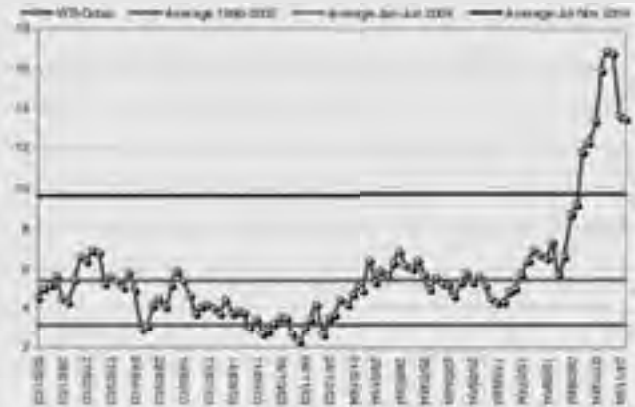
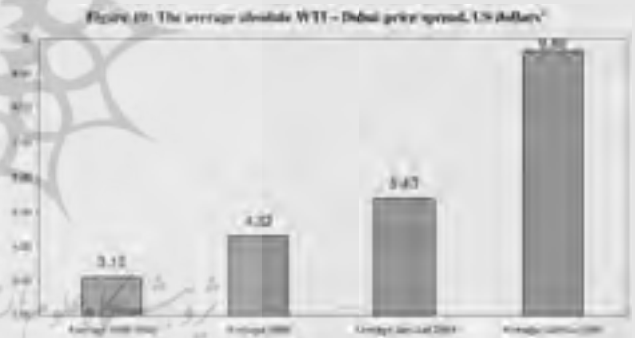


Figure 10 demonstrates the upward trend in the WTI and Dubai price spread. It is evident that the spread has been steadily widening over time.

Figure 10: The average absolute WTI – Dubai price spread, US dollars



Apart from high oil demand growth, good refinery margins, fear of supply disruption, increasing speculators activities and high oil prices over the last three years, the major characteristic of the oil market particularly in 2004 was a mismatch between sweet and sour crude oil supply and demand, arisen mainly from the constraints in the downstream sector. These constraints have widened the gap between sweet and sour grades. Good refinery margins may encourage refiners to make new investments, primarily in conversion units. But due to the rising demand for light products, the amount of this investment may not be enough to keep pace with the demand growth. Moreover, due to the switching product demand patterns and the shifting of crude oil production in favor of heavy and medium – sour crude in longer term, it is necessary to accelerate the investment pace in downstream. Otherwise, the oil market will remain imbalanced and exposed to speculative movements rather than fundamentals in the immediate future. OPEC members as major suppliers of medium – sour crude

are the main losers in these market conditions. They may lose further, if the existing bottlenecks in downstream are to persist. Taking as an example, close to 70% out of 30 million barrels per day of OPEC production is medium – sour which was on the average \$9.66 per barrel discounted to WTI during July–November 2004. We subtract the historical WTI – Dubai average spread, \$3.13 per barrel, from this unusual current spread between light – sweet and medium – sour crude oils (\$9.66 – \$3.13) to arrive at the excess spread \$6.53 per barrel. The historical average \$3.13 per barrel spread is taken for granted on basis of the quality difference between WTI and Dubai crude oils. The extra \$6.53 per barrel, however, can only be explained as the result of the current supply – demand mismatch and other extraordinary factors. Total daily value of such an excess spread (\$6.53 x 30m x 70%) of OPEC crude oil is more than 137 million US dollars. Multiplied by 30, its monthly value is over 4 billion US dollars. Total amount over July–November 2004 is more than 20 billion US dollars. Based on current estimates by Institut Français du Pétrole (IFP), the cost of establishing a grassroots sophisticated refinery is about US \$30,000 per barrel. Therefore, using this amount of money, OPEC would have been able to establish over 650,000 barrels per day grassroots sophisticated refining capacity. Investing in the establishment of deep conversion complexes is much cheaper than refineries and costs about US \$8750 per barrel as estimated by Institut Français du Pétrole (IFP). OPEC, alternatively, would have been able to establish enough conversion facilities to refine the bulk of its medium – sour crude and to take more market share in addition to stabilizing the market.

Did OPEC pay any attention to this opportunity?

Potential OPEC production cuts, seasonal demand fluctuations and increasing light crude oil production by CIS countries, would possibly moderate the current (late 2004) wider than normal price spread by 2005. But, due to structural changes in product demand pattern, it looks highly unlikely that the spread between light-sweet and heavy-sour crude will decline back to its historical \$3.13 per barrel average.

Finally, if OPEC members would like to contribute to

- the reduction of oil market volatility,
- the trimming of speculators' influences on the oil market,
- the narrowing of the gap between sweet and sour as well as heavy and light crude oil prices,
- the increasing of their market share,

they should directly invest in the upgrading of the existing refineries and the development of new refining and conversion units. OPEC members could also achieve the above-listed goals indirectly by encouraging other investors such as the refiners to invest in new refining and conversion facilities.

8 Concluding remarks

The following are some concluding remarks to sum up our analysis of the current high oil price and high spread envi-

ronment and their impact on investment. The current (2004) world oil market situation can be characterized as follows:

- A low spare capacity and a predominantly medium – sour production: World incremental oil supply is seen to rely increasingly on OPEC whose spare crude oil production capacity is now (late 2004) less than 5%, at its several-year minimum. This delicate and potentially unstable situation represents a threat to the world oil supply security and has created a bullish sentiment in the market supporting higher prices. Moreover, OPEC production is comprised of nearly 70% medium – sour crude oil with this ratio gradually rising as production runs into deeper reservoir layers. With the world demanding ever-greater quantities of light – sweet oil, the mismatch between supply and demand deepens resulting in wider price spreads.
- A strong world oil demand growth, dominated by demand for light – sweet crude: Closely related to the dangerously declining spare crude oil production capacity, is the exceptionally high 2.5 million barrels per day estimated world oil demand growth in the year 2004. The growth of light – sweet crude oil demand accounts for nearly 2 million barrels per day, equivalent to 80%, of this strong growth. In other words, there is an increasingly higher demand for light – sweet crude oil compared with that for heavy – sour. However, the quality of marginal and incremental barrels being supplied is disproportional to that of the demand. This helps further widening of the price spreads. The strength in demand growth at 1.5 million barrels per day and the demand tilt towards light – sweet crude are anticipated to continue in 2005.
- Downstream bottlenecks: The world oil product market has recently become very tight. World refining and conversion capacity is just sufficient to fulfill the product demand. In addition to that, a larger portion of world refining capacity is geared to refining lighter – sweeter crude oil while such crude oils are inadequately supplied and this is worsening as more stringent product quality specifications are being introduced in major consuming markets.
- Geopolitical tensions: An obvious example is the situation in Iraq which is still (November 2004) unsettled and could adversely affect the market any time in future.
- Unusually high price spread and investment opportunities: As of the second half of 2004, the spread between light – sweet and heavy – sour crude oils stands at record highs. For example, the average WTI – Dubai price spread is close to \$10 per barrel. This unusually high spread environment has resulted in a missing revenue or opportunity cost for OPEC amounting to nearly \$20 billion. Since the wider than normal spreads are expected to persist in near term, OPEC and others would have an opportunity for investment in refineries and conversion complexes in order to refine larger volumes of medium – sour and/or heavy – sour crude oils. This will eventually help reduce the current supply – demand mismatch and to narrow the price spreads.