

## Oil: A slow developed markets recovery amid an emerging markets revolution

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A slower than expected recovery in developed market demand has pushed back the clock on the global inventory drawdown, leaving world petroleum inventories higher and WTI crude oil timespreads weaker than we had anticipated. However, the rising expectations for economic growth in the emerging markets has pulled forward the clock on the OPEC spare capacity drawdown, providing stronger than anticipated support for long-dated WTI crude oil prices. Overall, we leave our 2010 WTI crude oil forecasts largely unchanged at an average price of \$90/bbl, but with lower prices at the start of the year and higher prices by 3Q2010. We also introduce a 2011 WTI crude oil price forecast of \$110/bbl, as we expect the increasingly strong demand from the emerging markets to once again require higher prices to ration demand out of the developed markets in 2011, once the OPEC spare capacity is exhausted and the increasing non-OPEC decline rates weigh on supply.

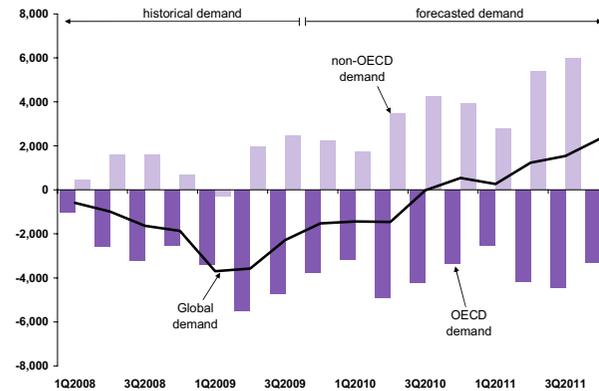
### World oil demand: A slow developed markets recovery amid an emerging markets revolution

While oil demand in the developed economies declined sharply during the credit crisis and the economic recession, it remained remarkably strong in the emerging markets. In fact, non-OECD oil demand growth had only one negative quarter during the entire recession, and since then it has rebounded strongly, reaching 1.6 million b/d year-on-year growth thus far in 4Q2009. This exceptional demand growth has been possible in large part owing to continued subdued demand from the developed economies, which has freed up significant amounts of supply, allowing emerging market economies to grow consumption unimpeded (Exhibit 4).

Consequently, the slow recovery of the developed market countries has accelerated the trend of resource realignment from the developed to emerging markets, which had been accomplished in recent years through rising prices that rationed demand out of the developed markets and the United States in particular. We expect OECD demand in 4Q2009 will end 3.76 million barrels below its record level in 4Q2007. Furthermore, unlike in the emerging markets, OECD demand has yet to show any significant signs of improvement. Although our economists' growth views for both the US and Europe suggest positive OECD oil demand growth for the next two years, we do not expect OECD demand to return to prior levels, initially owing to relatively muted economic growth expectations but ultimately owing to a lack of supply that forces demand cutbacks in the developed world. Accordingly, non-OECD demand is set to rise by 1.75 million b/d next year and a further 1.6 million barrels in 2011, pushing global demand back to pre-recession levels by 3Q2010.

**Exhibit 4: Declines in DM oil demand were accelerated by the recession, freeing up oil supply, which has allowed EM demand to grow unimpeded, likely returning global oil demand back to pre-recession levels by 3Q2010**

Change vs. 4Q2007, thousand b/d



Source: Goldman Sachs Global ECS Research.

**Demand in the developed markets: A slower than expected recovery pushes back the clock on the global inventory drawdown in the near term**

In September (see, *Energy Watch: All the market needs is just a little patience*, September 25, 2009) we raised our US demand forecast in order to reflect the extremely strong third quarter demand data released by the Department of Energy (DOE) in its weekly oil statistics. While we had originally forecast a much more benign recovery, the weekly data were showing a surprisingly strong upswing in total product demand towards 19.7 million b/d by the end of August. However, the more comprehensive monthly DOE data, which is released with a two-month delay, showed total petroleum demand was in fact much lower than the weekly data had suggested and in line with our original forecast. The discrepancy can be largely explained by an overestimation of the demand for "other" oil products, as part of what was initially reported to be demand in the weekly data was in fact stock build (see *Energy Weekly: What about "Other"?*, November 3, 2009). As a result, total US product demand was overstated by more than 400 thousand b/d in 3Q2009.

We therefore revise our demand forecast down by 0.5 and 0.3 million b/d for 4Q2009 and 2010 respectively, much closer to the original forecast that we made in June (Exhibit 5). Furthermore, as demand has effectively fallen short of previous estimates, OECD inventories have not yet begun to show any meaningful declines with the revision of US demand alone accounting for 38 million barrels of undrawn petroleum stocks. This has pushed the expected inventory normalization further back to 2Q2010.

**Exhibit 5: The downward revision of US oil demand in 3Q2009 implies lower oil demand for both 4Q2009 and 2010**

Million b/d

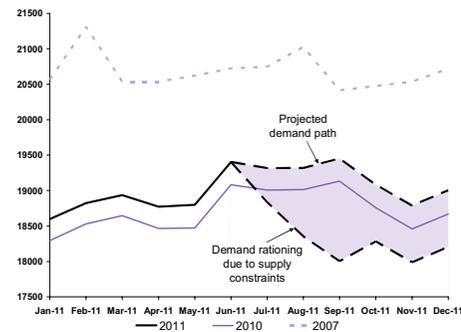
	3Q2009	4Q2009	2010
June Forecast	18.3	<b>18.5</b>	18.5
September forecast	18.4	<b>19.0</b>	19.0
<b>New forecast</b>		<b>18.5</b>	18.7
Weekly DOE data	19.0		
Monthly DOE data	18.6		

Source: Goldman Sachs Global ECS Research.

Our forecast rebound in US economic growth to 2.1% in 2010 and 2.4% in 2011 will likely push US total petroleum demand higher, albeit only slowly, reaching 19 million b/d by 3Q2010. However, although we expect the economic recovery to gradually increase total petroleum demand through 1H2011, we expect a global supply shortage in 2H2011 as strong emerging market demand runs up against anemic production growth, creating the need for demand cutbacks in the developed world (Exhibit 6). Furthermore, although distillate demand in the US will likely recover gradually, we expect demand to reach only 4 million b/d by 1Q2011 before sharing the same fate as US total product demand in the second half of 2011 (Exhibit 7).

**Exhibit 6: The recovery in US economic growth will shift US oil demand higher until a global shortage requires demand rationing**

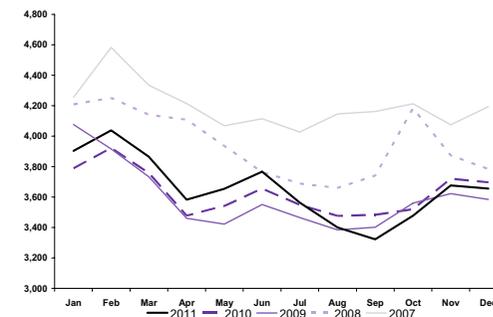
Thousand b/d



Source: DOE, Goldman Sachs Global ECS Research.

**Exhibit 7: US distillate demand will move higher again, but only at a slow pace, until demand rationing is forced to take place in 2H2011**

Thousand b/d



Source: DOE, Goldman Sachs Global ECS Research.

Outside the US, we expect European oil demand to grow by about 150 thousand b/d in 2010 as the largest European economies continue to rebound. We also expect Japanese oil demand, which was practically in a continual decline since 1997, to grow by 50 thousand b/d as Japanese industrial production, which was hit particularly hard by the recession, is expected to rebound considerably next year.

Overall, we expect OECD crude oil demand to grow over the next two years for the first time since 2005, albeit only modestly, by 0.4 million b/d in 2010 and 0.3 million b/d in 2011, which will leave total OECD demand 3.4 million b/d and 3.3 million b/d below 2007 levels by 4Q2010 and 4Q2011, respectively. We expect OECD demand improvement to be slowed down initially by relatively muted expectations of economic growth, especially in the United States, and ultimately by the lack of supply in the latter part of 2011 and beyond.

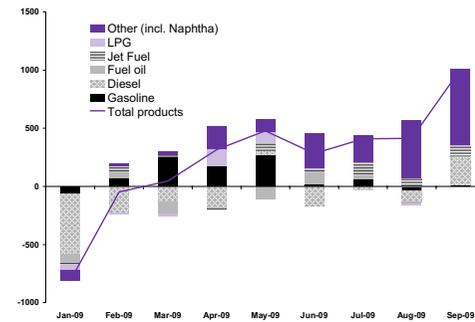
**Demand in the emerging markets: rising expectations for economic growth in the emerging markets pulls the clock forward on the OPEC spare capacity drawdown**

Emerging market oil demand has been remarkably stable over the past 12 months. In fact, year-on-year demand growth in the emerging markets turned negative for only one quarter during the entire recession, quickly rebounding and already rising 1.6 million b/d above year-ago levels thus far in 4Q2009. However, this emerging market demand strength has not been sufficient to offset the massive declines in non-OECD demand, preventing any meaningful drawdown in OECD petroleum stocks. Nevertheless, while demand growth from emerging markets has not been able to offset lagging OECD demand, putting pressure on front end prices, the signs of growth in the emerging markets have become very impressive, suggesting strong future demand and inventory drawdowns, which has lent substantial support to long-dated oil prices in recent months.

In 2010, we expect China to remain the main driver of emerging market demand growth, accounting for more than one-third of total non-OECD demand growth next year. However, while Chinese demand for industrial and infrastructure related "other" petroleum products, such as asphalt, petroleum coke and naphtha – a feedstock for the petrochemical industry – has grown with unprecedented speed, demand for transportation fuels has shown only modest improvements since the beginning of the year (Exhibit 8). This dynamic has caused some concern that Chinese demand for "other" petroleum products might have been overstated and that total oil demand was in fact much lower than the official data suggested. However, unlike in the US, where an inaccurate demand estimate for "other" petroleum products had initially led to an overstated overall demand picture, demand for "other" petroleum products in China, in our view, is real and consistent with the current state of the Chinese economy, which has required substantial amounts of industrial fuels to support strong industrial activity. If anything, we believe that demand could surprise significantly to the upside in 2010 as demand for transportation fuels eventually catches up with demand for industrial related products, overshooting our forecast (Exhibit 9).

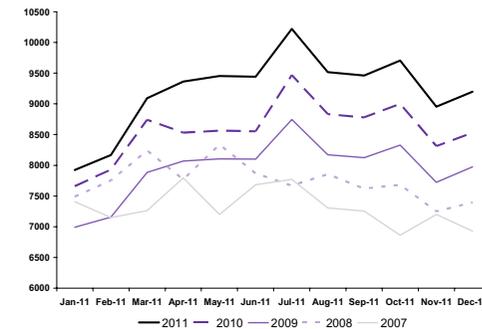
**Exhibit 8: Chinese oil demand was largely driven by demand for industrial related "other" products...**

Yoy changes in thousand b/d



Source: China Customs, National Bureau of Statistics of China, Goldman Sachs Global ECS Research.

**Exhibit 9: ...implying positive upside surprise to our forecast if demand for transportation fuel follows total product demand** Thousand b/d



Source: IEA, Goldman Sachs Global ECS Research.

It is important to emphasize that even though China is crucial for emerging market oil demand, many other non-OECD economies are in a similarly healthy state. Our economists forecast that BRIC economies are set to grow by 9.2% in 2010 from 5.0% in 2009, implying a significant year-on-year uptick in oil demand, while Middle Eastern countries will likely add 0.8 million b/d of demand over the next two years. Therefore, we expect total non-OECD demand to grow by 1.7 million b/d and 1.6 million b/d in 2010 and 2011, respectively, largely made possible by expected subdued developed market demand.

**World oil supply: On the sustainability of higher growth**

Since the beginning of the current decade we have argued that sustained higher oil prices would be required to motivate investment in next generation production capacity required to meet future demand. However, the inability to grow supply after a decade of sharply higher prices turns the question of the sustainability of higher long-term commodity prices into one of the sustainability of higher long-term growth as ongoing robust economic growth in the emerging markets continues to be an ever greater pull on the world's resources, increasingly bidding away the more scarce commodities from the developed economies. Constraining production growth has been decades of underinvestment in supply infrastructure owing initially to poor returns but more recently to protectionist policies that constrain the free flow of capital and labor regardless of the price of oil or expected returns.

**Non-OPEC supply: the troubling arithmetic of non-OPEC decline rates**

Non-OPEC supply has surprised to the upside in 2009 as new projects in Russia came onstream much earlier and faster than previously expected. However, this situation is unlikely to repeat itself in 2010, as we expect non-OPEC production growth to resume its negative trend.

A simple example makes clear that non-OPEC production faces serious obstacles. Our equity analysts expect that the largest projects in non-OPEC countries will add around 1.4 million b/d of new supplies in 2010. Outside of these large projects, decline rates will average around 3.5%-4.0% per annum in our view, which implies that the sustainable production level will be around 35 million b/d, which is much lower than the current crude

production of 46 million b/d. In order to keep production stable, supplies from new projects would have to be at least 30% higher next year. However, supplies from new projects are forecast to decline further in 2011 and beyond. Moreover, in order to keep pace with global demand growth of 2.6% next year, additional supply of 3.2 million b/d would be needed, nearly two and a half times as much as there is in the pipeline for next year or about Canada's entire current production. In other words, in order to meet the expected demand growth every project that is currently scheduled out to 2012 would need to come on stream next year

#### **OPEC supply: Spare capacity is limited, likely to be exhausted in 2011**

Given the strong growth rates in emerging market demand at the same time that non-OPEC production is facing declines, we believe that OPEC production will have to grow by 3.9 million b/d by 2Q2011. At that point, "effective" OPEC spare capacity will likely be exhausted, suggesting that higher prices will be needed to effectively ration OECD demand in order to bring the market back into balance. We believe that "effective" capacity is lower than what the official data suggest, as when oil prices hit \$145/bbl in June 2008, OPEC spare capacity was nearly exhausted even though official sources reported spare capacity of 2.6 million b/d at that time. Furthermore, in June 2008 we observed stock draws in the OPEC countries, which suggests that increased exports were from stock piles, not even production.

Although the expansion of the giant Khurais field in Saudi Arabia and several NGL projects have the potential to add 2 million b/d of new supplies by the end of 2011, production in most other OPEC countries will likely stagnate or in some cases even decline as there are no other meaningful projects in the pipeline. Overall, we expect global demand to outpace supply by 2Q2011 as OPEC will have effectively exhausted spare capacity at that point.

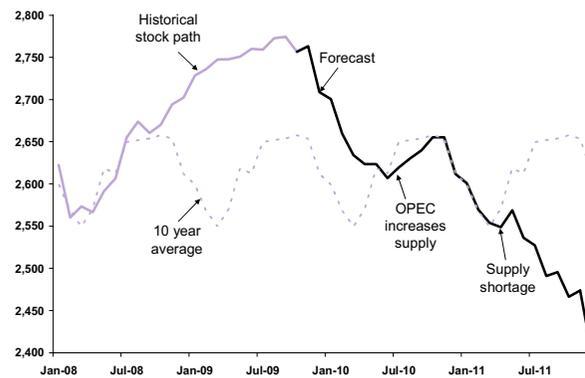
#### **2010: The world oil market rebalances**

Despite the fact that OPEC has left its production quota unchanged since its record cutbacks in December 2008, OPEC output has increased by 0.8 million b/d since the trough in February 2009. Historically, OPEC has deferred quota increases until OECD inventories have reached their 10-year average. This time around, we expect OPEC will wait to increase production not only until OECD onshore inventories have normalized, but also until the significant overhang in floating storage declines meaningfully. However, we expect that by 3Q2010 OPEC will have to ramp up production strongly in order to bring global supply into balance with rapidly increasing global demand, as by 3Q2010 Emerging Markets demand will have offset the entire lost OECD demand owing to the recession.

#### **2011: Pricing demand destruction**

By 2Q2011, we expect the combination of exhausted OPEC spare capacity and still strong emerging market demand will begin to push inventories below the 10-year average. We believe that the inventory decline will push prices higher until demand rationing in the OECD will be significant enough to offset demand growth from non-OECD countries, bringing the market back into balance (Exhibit 10).

**Exhibit 10: As OPEC spare capacity will be exhausted by 2Q2011, OECD inventory levels will fall below the 10-year average, before OPEC demand rationing brings the market back to balance** Thousand b/d



Source: Goldman Sachs Global ECS Research.

Although product spreads were tight during 2004-08 owing to the lack of refinery capacity, the significant expansion in global refining capacity over the past year has changed that dynamic. We expect product spreads to remain subdued while crude oil prices are being pushed higher as crude supply will be the bottleneck rather than refinery capacity.

Overall, the inability to grow oil supply after a decade of sharply higher prices turns the question of the sustainability of higher oil prices into one of the sustainability of higher demand growth and hence higher economic growth. In our view, it is not that the world is running out of oil but that rampant growth of protectionist policies has prevented efficient investment in supply infrastructure. Consequently, such an undesired outcome is not inevitable. As seen in other commodities such as natural gas or the petroleum refinery industry, many of the supply-side problems can be alleviated through policy that incentivizes investments in the sector. However, if the necessary infrastructure investments are neglected, we could soon see a rollback to the explosive scenario in early 2008, when prices hit \$145/bbl and OECD demand started contracting sharply.

### Rolling our long Heating Oil short Fuel Oil trade

We recommend rolling our current long 1Q2010 USGC Heating Oil, short 1Q2010 USGC 3.0% Fuel Oil, which we first introduced on Wednesday, July 15, 2009, and into 3Q2010.

As the demand recovery in the developed economies is lagging, distillate inventories have not yet shown any meaningful declines while OPEC has kept production low, keeping fuel oil prices at elevated levels as supply of heavy sour crude remains subdued. This has pushed our expected outperformance of heating oil over fuel oil in 1Q2010 further out to 3Q2010. However, we expect strong non-OECD demand to offset lagging OECD demand, implying sharp declines in OECD petroleum stocks, eventually cleaning up the large overhang in distillate inventories, while OPEC will have to ramp up production sharply to keep it in line with supply. As the current OPEC spare capacity predominately consists of heavy crude, a resumption of production will likely foster residual fuel oil production, which in turn should reverse the current anomalous strength in residual fuel oil prices.