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SPECIAL REPORT: OIL

Diesel Dominance and Demand Destruction

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Introduction

Although it has received little attention, structural changes in demand for diesel and gasoline—rather than speculation, geopolitics or the dollar—may have played a major role in this year's spectacular rise, and then fall, in global crude prices. John Kingston peeks under the hood of the world oil market and determines that, if so, those pressures are dissipating.

Look under the hood of this year's price movements, and you can define it with a pair of D-based alliterations: diesel dominance and demand destruction.

Prices are only the end result of other changes that occur in the marketplace. So the rise of US benchmark West Texas Intermediate to $147/barrel in early July could be highlighted as the biggest story of the year. Similarly, the dramatic two-month collapse to under $90 might be cited as maybe the second biggest.

But that's where the two D's come in. A strong argument can be made that it was an unprecedented rise in the price of diesel fuel, not speculation or geopolitics, that dragged up the price of crude in its wake. And similarly, it was a degree of demand destruction, but also changes in the output mix at refineries, that sent it on its downward ride.

Diesel Driver

There's no way to look at crude and diesel prices side-by-side, and then throw in the sinking gasoline price as a third factor, and at least suspect that it was diesel that spurred the rising price of crude. That would come as news to a bevy of politicians, analysts and yes, even some journalists, who wanted to blame a good portion of the increase on 'speculators', a loose category that includes hedge funds and index fund investors.

But the "hot money" in commodities does not go into things like ultra low sulfur diesel in the US Gulf Coast, or the European diesel market, and it is in those arenas that tremendous gains were posted in the first half of the year. Significantly, the increases in diesel prices in those markets outstripped the rise in the outright price of crude benchmarks WTI or Brent.

Outright spreads don't give a full picture of the relationship between crude and products, as outright gains in prices theoretically should drag spreads wider, so it's useful to look at the percentage relationships between crude and diesel instead to see how diesel surged ahead of both gasoline and crude. Weak product markets result in a high ratio of crude to products; if a grade of crude is 100% the value of the products, that number reflects a weak product market, or a strong crude market, or both.

In the US, the diesel market started to strut its stuff in September 2007. Some of that increase may have been seasonal; diesel, like heating oil, is a distillate, and as a result runs stronger in the northern hemisphere winter. Light Louisiana Sweet crude stood at about 82% of the value of Gulf Coast pipeline ULSD when the month started, based on Platts' assessments of both that grade of crude and the product. It rose to 90% at the beginning of 2008.

But even though LLS is a crude relatively rich in diesel yield, its ratio to ULSD declined from there. It sunk to near 80% by early to mid-March, and didn't rise much above 85% for the rest of the first half. By mid-September, product strength resulting from hurricanes Gustav and Ike had pushed it below 80%.

That may not look like much until the ratio of LLS to gasoline is observed in the Gulf Coast market. On the first trading day of September 2007, the ratio of ULSD to crude and the ratio of gasoline to crude was about the same. From that point, the weak gasoline market – yes, despite consumer screaming, it was weak relative to the rest of the petroleum complex – watched as the price of LLS continued to move closer.

The gasoline to LLS ratio held around the 100% level for several periods right through end-July 2008, with the spread moving out after that as refiners began to react to relative prices; they tweaked and twisted their refineries to make more diesel and less gasoline, eventually tightening the gasoline market and putting pressure on the diesel market.

A similar situation was observed in Europe. Brent to European diesel opened in September 2007 at just over 80%, peaked at more than 83%, but then sunk to just under 72% by early June. Meanwhile, gasoline in Europe was doing the same thing relative to Brent as it was in the US compared with LLS; hanging around 100% or just a bit under, before finally moving into the low 90's toward the end of the summer.

But what made diesel surge in the first place? A series of trends, some of them years in the making, seemed to impact the market all at once. Europe's tax policies have long favored the purchase of diesel cars, increasing its consumption relative to gasoline. The continuing evolution of tighter sulfur

rules in Europe and the US had the effect of marginally tightening refinery output. Nigerian crude output was increasingly limited by rebel activity in the Niger Delta, and its crude is particularly diesel-rich. (That's not geopolitics; that's supply and demand.)

But then why did it relax? The supply side got considerably better. In the US, where refining data is considered the most transparent, gasoline as a percentage of total output plunged from 47% in January to 41.9% by end-June; total distillate yield rose from 26.5% to 28.1%. Changing output slates at refineries is not like changing a menu; it's far more complex. But refining engineers and managers can react to the signals sent by the market, and certainly, these figures support that.

New Product Market

Refining managers are finding themselves relearning old lessons quickly. They were long taught to maximize gasoline output at their plants, but that's a lesson that doesn't make much economic sense when a barrel of crude is priced at roughly the same level as a barrel of gasoline.

A key factor in the new economics of gasoline refining is the steady inroads that ethanol is making into the gasoline supply pool. By some estimates, ethanol now accounts for about 6.5% of US demand. Most of those gallons has displaced gasoline – others displaced MTBE, but that was a few years ago – and it's one of the reasons why gasoline margins were so weak for most of 2008.

Refinery reductions in the output of gasoline, later supplemented by hurricane fallout, did turn gasoline margins higher for a while. But longer-term, there needs to be a realignment in refinery operations to make way for that ethanol surge, which, despite ethanol's controversial year, still has plenty of political wind in its sails to make it a permanent and growing part of the American gasoline landscape.

Moreover, the great diesel surge of 2008 may have been the last for a while. The market is reacting to the continued "dieselization" of the world demand picture. Refiners are adding far more hydro cracking capacity, which increases the output of diesel, than they are of cat cracking capacity, which boosts gasoline output. In its most extreme case, according to the refinery engineering firm of Turner Mason & Co., European refiners through 2014 will add 581,000 b/d of hydro cracking capacity and a mere 20,000 b/d of cat cracking capacity.

Demand destruction also contributed. In the US, for example, total distillate product supplied, as defined by the Energy Information Administration, went from about 4.34 million b/d at the end of June to 4.28 million b/d just two months later. That level was also down slightly from a year earlier. Outright European diesel prices dropped more than 30% from early July highs through mid-September as demand destruction took place there as well.

Subsidized Demand

Yes, demand destruction. The great watchword of the second half of the year, as crude moved from its $147/b high for WTI, and a dated Brent high, as assessed by Platts, of more than $144/b. But true demand destruction worldwide remains difficult to achieve. The "DD" of 2008 might be laughed at by observers of the crude market ten years ago, when the Asian economic crisis slashed demand significantly and drove prices to their lowest inflation-adjusted levels ever.

For example, in late 1997, the International Energy Agency had estimated that 1998 world petroleum demand would be 75.6 million b/d. When it looked back over 1998 a few years later, with the benefit of hindsight, the agency estimated that demand had actually plunged to 73.8 million b/d. That's demand destruction.

Maybe that will happen again. In fourth-quarter 2007, the IEA said the world consumed 87.2 million b/d. Its estimate for fourth-quarter 2009 is up 1.8 million b/d from that. Will that growth actually be registered?

If it does, it won't come from developed nations. Demand destruction in the developed economies is not disputed; the IEA projects annual demand for the OECD nations at 49.2 million b/d in 2007, down to 48.6 million b/d a year later, and 48 million b/d in 2009.

Oppenheimer & Co. analyst Fadel Gheit has made the observation that demand has declined in almost every part of the world in 2008, except for those countries where it is subsidized through price controls and caps. India and China are two of the most obvious examples of significant growing economies where prices are capped; many Middle Eastern countries fall into that category as well.

Rising prices in first-half 2008 led many countries to reduce subsidies as their cost strained national budgets. Ultimately, this step may be painful for the citizens of the countries in question, but it's beneficial for oil markets, as it allows true price-based decisions to impact global supply/demand balances.

But with the recent decline in prices, that pressure on government finances is reduced, and there is a retreat in the willingness of politicians to touch off the loud, sometimes violent protests that often accompany retail energy price increases. And with subsidized prices still on the books, it probably means that global demand destruction may not prove to be quite the price-flattening force it is expected to be, despite the decline in OECD countries. Those government-supported prices raise the prospect that demand from the subsidized world will continue to rise, unconcerned by any increase in world prices in their government-created unreal economic world.

And that isn't good, because rising demand is coming up against a supply side that for the medium term remains troubled. Mexico continues to post year-on-year double digit output declines. Venezuela appears to be struggling to keep up its 2.4 million b/d in output. Russia's output is flat to slightly lower; quasi-nationalization is certainly not working to boost output. In general, projections of non-OPEC supply growth by agencies such as the IEA wind up well short of reality when the barrels are finally counted.

Short-term Balance

But for the balance of 2008, and into 2009, those problems are probably not insurmountable. For the first time in many months, OPEC is producing at a level above what is known as its "call." The call is roughly defined as global demand less both non-OPEC output and OPEC natural gas liquids production. If OPEC output is significantly short of the call, a stock change will be necessary, and high prices may be needed to bid that oil out of inventory.

But in August, the IEA estimated that the OPEC call was going to be 31.4 million b/d in the fourth quarter. And for the same month, Platts estimated that OPEC was producing more than 32.8 million b/d, well above the call. Last year's fourth-quarter inventory pull of 800,000 b/d, large by historical measures, helped contributed to the first real run at $100/b; that force is not expected to be in the market as 2008 ends.

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