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TRANSPORTATION FOCUS

What Drives Diesel Pricing?

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Fuel costs, specifically diesel prices, are a substantial part of overall transportation expense, as shippers learned painfully as rates and fuel surcharges rose dramatically in the 2006 to mid-2008 period.

But what really drives diesel price levels?

Those who have been in the industry for awhile know that historically, "spot" gasoline prices actually have generally been higher per gallon than that for diesel - though that relationship is actually quite dynamic. Though from the period of 1994 to 2004 gasoline was more expensive 61% of the time, in those periods when diesel did go higher than gas, it sometimes did so dramatically: in early 2000, diesel briefly became some 75% more expensive than gas, for example.

Since 2004, however, that general situation has reversed, with gas being more expensive than diesel only 24% of the time, as shown in the chart below, provided in a recent report on the topic from the Dallas region of the Federal Reserve bank.

Of course, oil prices are by far the dominant factor in the level of gas and diesel prices, and explain the rise and fall of both over the longer term quite precisely. However, the Dallas Fed says, other factors can impact those prices in the short and even mid-term, and cause changes both in the relationship of gas to diesel pricing and absolute price changes in diesel versus oil.

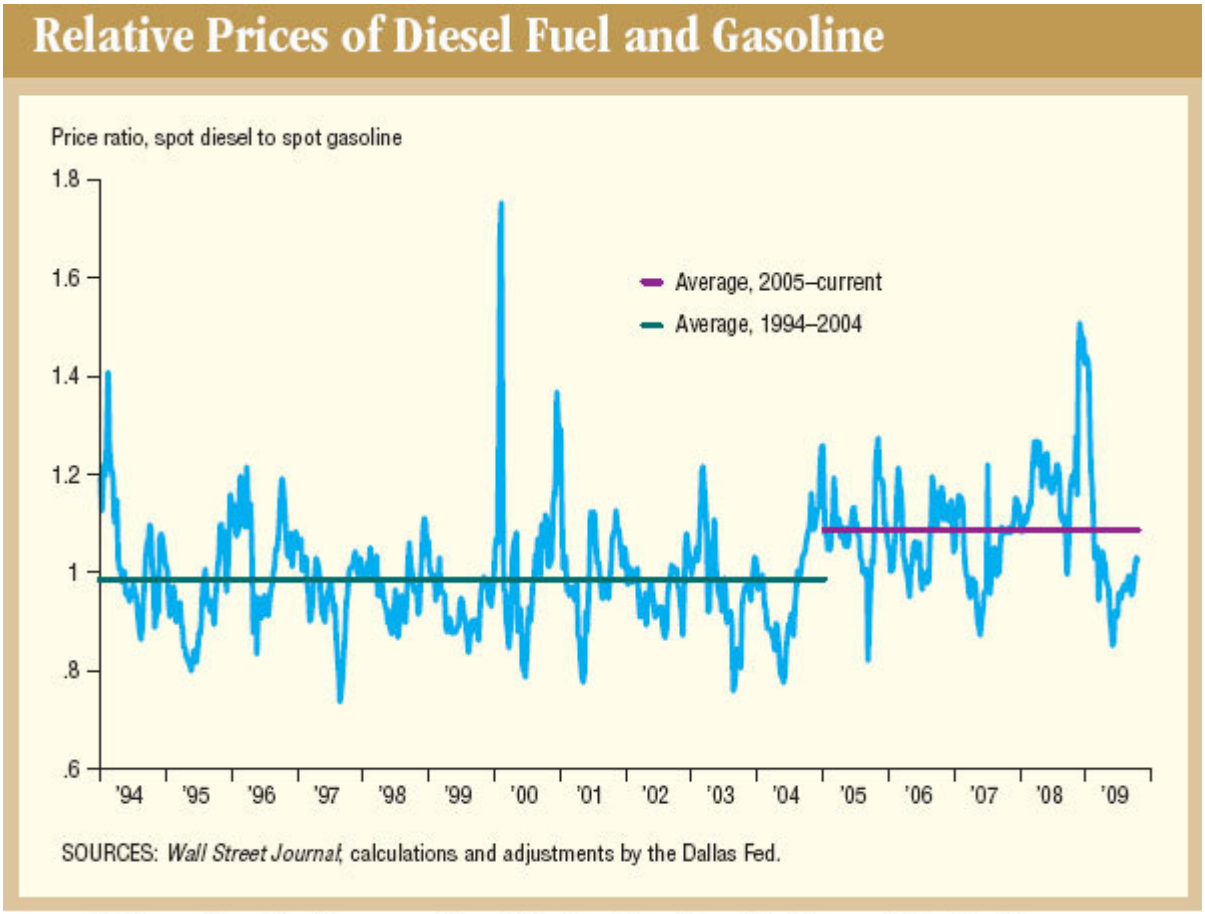
"Over short time periods, the prices of crude oil and its derivatives can deviate from one another. Over longer periods, they're highly correlated," the Fed report says.

The Fed's analysis, for example, shows that on average, the spot price of diesel moves 2.86 cents a gallon for every $1-per-barrel change in the spot price of West Texas Intermediate (WTI) crude oil, a benchmark often used for market analysis.

At certain points, however, other factors come into play that also impact how diesel is priced in the market, though the effects are generally temporary - days or weeks, occasionally longer.

Part of the equation is that the first step in the refining process is different for diesel and other end products than it is for gasoline. When making diesel, refiners first create "distillate," from which not only on-road diesel but also off-road diesel (higher sulfur content) and home heating oil are produced. Distillate makes up about 25-30% of refining output, gasoline some 40-50%, and other products (e.g., jet fuel) the remainder, depending in the season. In the winter, for example, distillate will be at the upper end of the range, while in the peak summer driving season gasoline production will be at its top.

This change in demand for different oil-based outputs explains much of the differences oil prices versus changes in diesel and gas prices. However, the winter spike in demand for heating oil and therefore distillate that could impact diesel prices has been ebbing of late, as more and more US households switch from heating oil to gas or electric to heat their homes.



This chart shows the historical relationship between diesel and gasoline prices. So, for example, in 2008, diesel prices rose to more than 50% of gas prices (approximately 1.5 to 1 ratio).

The Federal Reserve also found that recent environmental regulations, especially ones that forced refiners to reduce the amount of sulfur content in on-road diesel fuel (i.e., "ultra-low-sulfur diesel"), have had a significant impact on diesel costs. While phased in over time, the resulting investments made by refiners to meet the new rules and some extra production costs have in effect increased the average price of diesel fuel by 6.25% starting in the mid-2000s, thus creating a new long-term cost basis for diesel relative to gasoline that may explain much of the change in spot diesel to gasoline prices during that time.

Less Predictable Factors

Of course, other, often unpredictable factors can also impact diesel prices relative to oil and gasoline. For example, a longer or more cold winter than normal will tend to drive the price of distillate and hence diesel prices up. In 2008, China began accumulating large reserves of diesel to ensure there were no disruptions in the availability of fuel for the Olympics in Beijing that year and to at least temporarily switch from coal to diesel in some factories to reduce air pollution for the games and protect the country's environmental image.

As another example, as the recession started in full this year, diesel demand dropped much more sharply than demand for gasoline, as the shipment of goods fell by double digit levels while consumer driving shrunk by much lower percentages. As a result, diesel prices plummeted relative to gasoline, and fell below gas prices for most of the year after being well above them for most of 20007-08.

Now, however, with signs of economic recovery, diesel prices started to pass gas prices in October.

All told, the Dallas Fed has developed a new model (See Federal Reserve on Diesel Prices) that includes oil prices, seasonal factors, the impact of regulations, and some model of these other factors that impact demand and/or supply that it says explains some 80% of the change in diesel prices, an improvement from past models. It would predict the absolute price of diesel, not just the change, at very high levels.

Using that model, the Fed predicts that the price of a barrel of oil will increase to $85 sometime this winter (it hovered near $80 per barrel as this week began). Using these oil prices, the model suggests that spot diesel should rise 25 cents a gallon over the next six months and 41 cents a gallon over the next 18 months.

That in turn would translate into a spot-market (wholesale) diesel price of $2.15 a gallon in June 2010, an outlook consistent with the futures markets. Historical relationships between spot and retail diesel prices would then further suggest a pump price of around $2.92 a gallon in June.

Our key takeaways from all this: (1) it is helpful to understand all the factors that go into diesel prices, and be able to explain at some level how oil, diesel and gas prices are set relative to each other; (2) when shippers see certain ratios moving higher or lower than historical norms (e.g. price of diesel changing way more in one direction than gas, or diesel prices changing much differently than the the average of 2.86 cents per gallon for every $1.00 change in oil prices), you can bet the situation will reverse itself before too long.

That may be useful information for planning and budgeting.

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