

How Cold Is It?

Those of a certain age will recognize one of Johnny Carson's favorite set-up lines, "How cold is it?" Let's ignore the fact it was only six weeks ago we were marveling at how warm it was in the eastern half of the country in December and the first week of January. Memories are short.

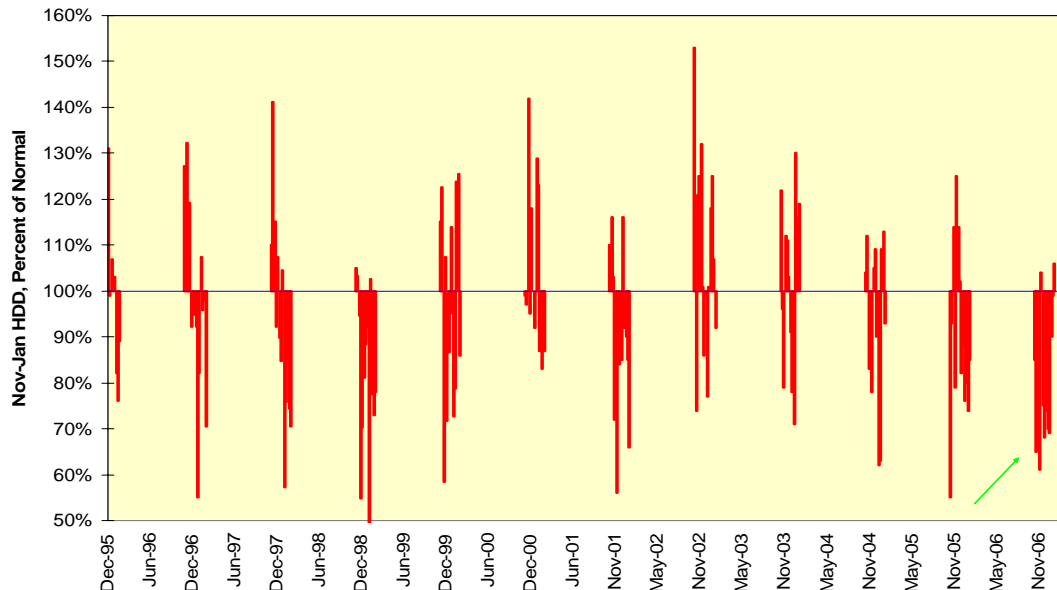
Also, please notice how I resisted the temptation to say anything about global warming. I have learned the hard way the True Believers on this subject rank right up there with the silver bugs in the incivility department.

A Matter of Degrees

Thanks to the somewhat-growing industry in weather derivatives, we can quantify Johnny Carson's question in terms of heating degree-days (HDD). A HDD is the maximum of zero and 65 degrees Fahrenheit minus the day's average temperature; if, for example, a given day averaged 20 degrees, that would count as (65-20) or 45 HDD.

It is more common to express HDD as a percentage of normal. If we plot the weekly HDD on this scale for the U.S. Northeast, the region most heavily dependent on heating oil, we can see just how warm it was in November-December 2006, highlighted with a green arrow, and how only recently did the HDD reading climb over 100 percent. Only the HDD for the months November-January are displayed for clarity.

Nov/Dec/Jan Northeast Heating Degree-Days



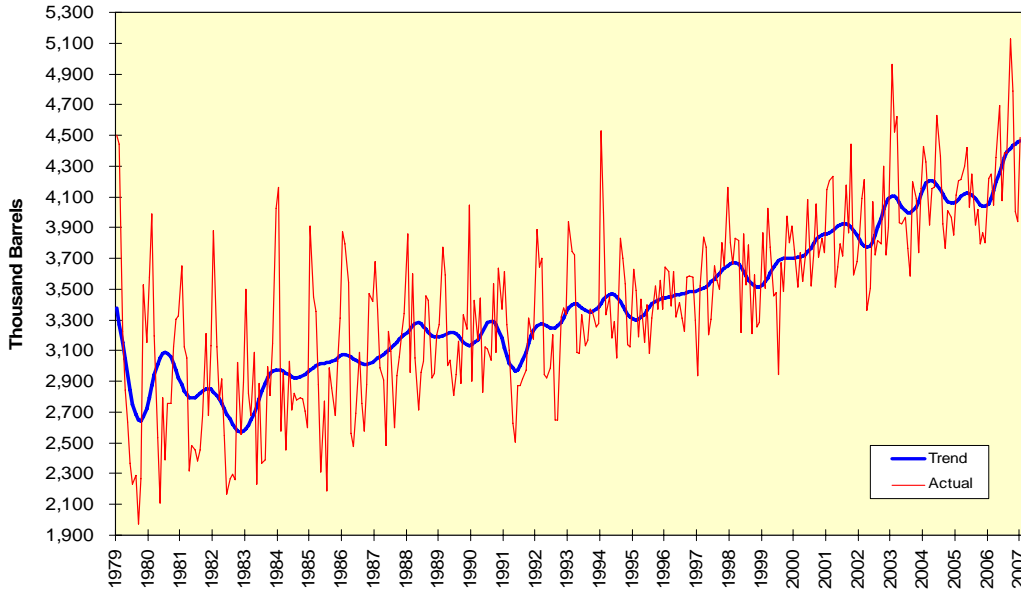
Seasonal Trends

Much of the recent jump in crude oil prices has been attributed, correctly or not, to the astonishing development it got cold in late January and early February. Who knew? Statisticians, however, are trained to keep a cool head with respect to cold weather. Let's run the American Petroleum Institute's implied distillate demand and inventory data through a seasonal adjustment program and take a look at the underlying trends.

Distillates – and this is very important in the discussion below – include diesel fuel used for truck, rail and marine transportation and jet kerosene used for air transport. Those demand sources are not as seasonal as is the demand for space heating.

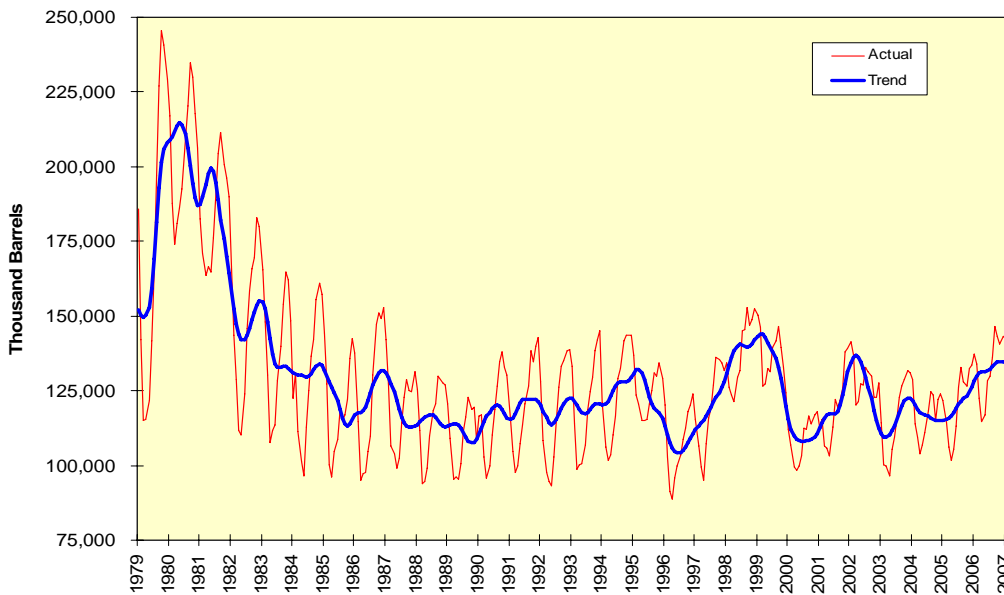
First, let's look at the implied demand numbers. Even with the higher prices seen since the winter of 2003-2004, the seasonal trend, the core around which actual demand numbers oscillate, has been moving higher. That says the income elasticity of demand for distillates outweighs its price elasticity of demand. Restated, as the economy grows and trucks continue to run around American highways, they will continue to buy diesel fuel so long as they can pass the costs through to their customers.

American Petroleum Institute Distillate Demand



What about inventories? The closure of a large number of smaller, less-sophisticated refineries during the early 1980s led to a massive decline in primary inventories, those held at the refinery level, of distillates. Once that destocking was complete, inventories have stayed in a fairly narrow range. The seasonal trend since late 2003 has been for a gradual build in inventories.

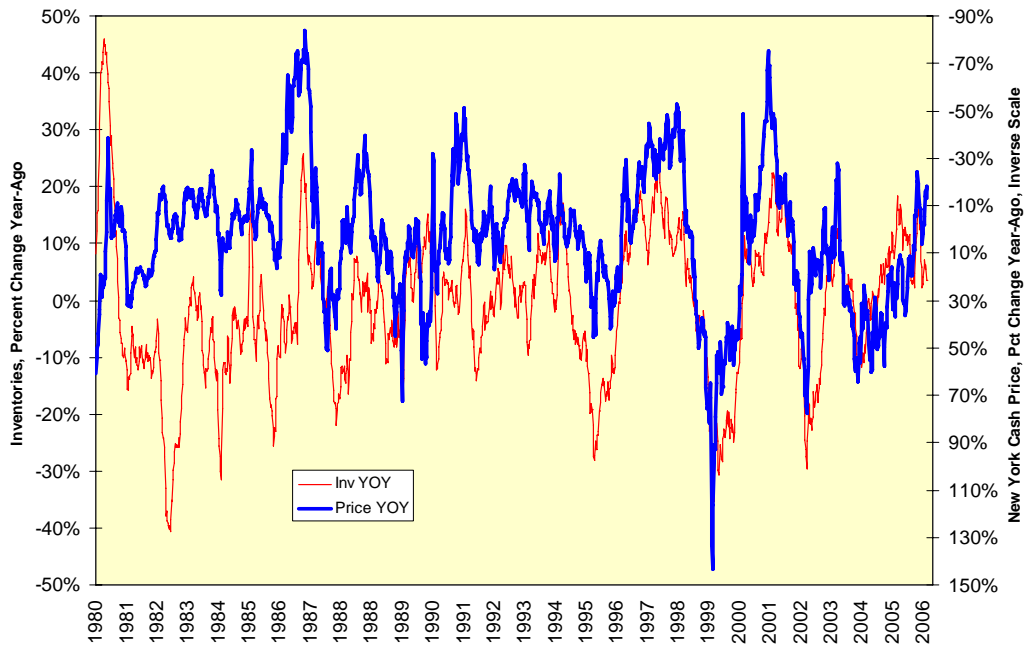
American Petroleum Institute Distillate Inventories



Inventories And Price

Now here's a little surprise. Stare at the actual inventory line in the chart above and note how it oscillates about the seasonal trend. If we convert this line to a percentage change from year-ago levels, which accounts for seasonality, and map it against price's percentage change from year-ago levels plotted inversely, we see a strong inverse relationship. The cash price for heating oil reacts very strongly to changes in the inventory number.

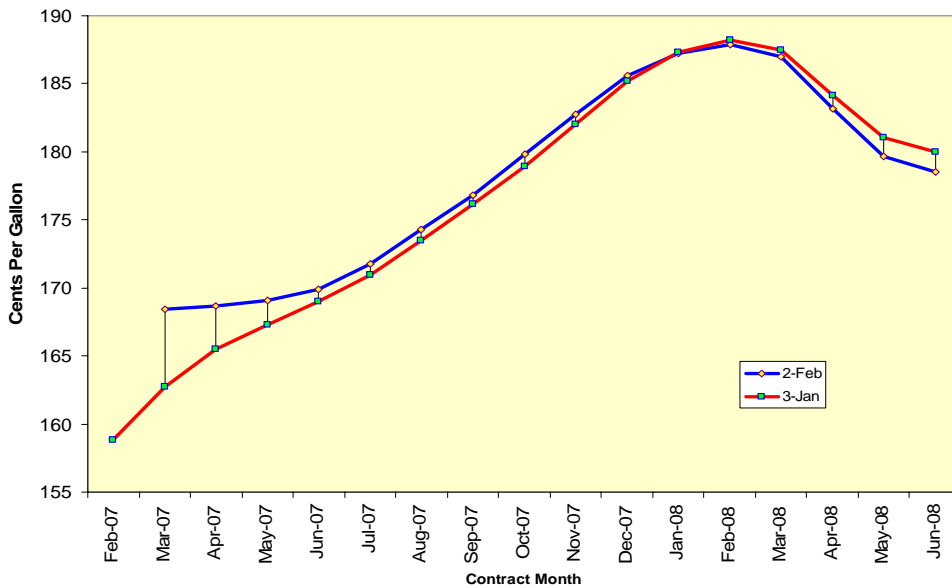
Heating Oil Price And Inventories



What's so surprising about that, you ask? Markets are discounting mechanisms; price is supposed to be set by replacement value, not by current demand levels unless we are in danger of running low on supplies. But the overall inventory levels have been rising and remain 3.5% over year-ago levels, so there goes the supply shortage argument right out the window.

Is it possible the market's expectations for replacement cost can change that rapidly with the change in the weather? Let's take a look at the forward curve of the heating oil futures market on two different days, Wednesday, January 3rd and Friday, February 2nd. The former date was when we were wondering whatever happened to winter; the latter was after it arrived.

Fair Weather Futures Friends



The March contract increased all of 5.69 cents per gallon, or \$2.39 per barrel between the two dates; for purposes of comparison, the March crude oil contract *decreased* \$0.39 per barrel, from \$59.41 to \$59.02, over the same period.

The April and May heating oil futures contracts rose as well; after that, the increases were insignificant for the remainder of 2007.

What the real change is, however, is not in absolute price but rather in the forward curve. The early January curve remained in a positively sloped carry structure, one wherein holders of inventories could hedge their positions and defray the costs by selling more expensive futures. The current forward curve is flat; holders of inventories now have to pay virtually the entire physical and capital costs of storage. That makes holding inventories expensive and provides every incentive to sell available supplies into the market as soon as possible.

Past episodes of cold-induced rallies in heating oil have ended with abrupt downturns in price once the weather forecast changed and traders realized glaciers were not on their way south. This one no doubt will end similarly. Anyone who has giddily loaded up on heating oil or natural gas futures or, worse, energy stocks based on the current cold weather had better to be ready to sell first and ask questions later.