

Two Commodities, Two Curves, One Name

Heating oil, which began trading in November 1978, was the first successful energy futures contract traded in the U.S. It was not the first petroleum product futures contract approved in the 1970s, however, the CFTC had approved COMEX contracts for crude oil and propane and a NYMEX contract for residual fuel oil for trading in July 1975.

The venerable contract was replaced by a contract on ultra-low sulfur diesel fuel (ULSD) beginning with the May 2013 contract month. Even though ULSD will trade under the old 'HO' ticker and derives from the same cut of the refined product slate as heating oil, it is a different commodity and has different trading patterns.

The Late, Great Heating Oil Contract

Why heating oil succeeded where others failed can be answered by a condensed look at history. First, crude oil prices were not free-market prices in the 1970s but rather administered prices. The international majors or "Seven Sisters" had set the various benchmark prices for years, and the OPEC began seizing administrative power between 1970 and 1974. U.S. prices were set by a system of "postings" from refiners as to what they were willing to pay.

Second, while heating oil is a highly fungible product, crude oil is not. Differences in weight, or API (American Petroleum Institute) specific gravity, and the content of sulfur, paraffin, naphthenic and palmitic (NA-PALM of horrendous weapon notoriety) acids, metals and other qualities mean there are close to 100 different crude oil specifications refiners have to juggle. They cannot risk taking physical delivery of a crude oil not suited for their refinery configurations.

Third, heating oil comes from a cut of the refinery output slate called "middle distillates." This includes the Number 2 heating oil used for space heating, but it also includes the diesel fuel used by railroads and trucking firms and is related quite closely to the jet kerosene used by airlines. As all refiners produce middle distillates – or gasoil – and as there are a large number of commercial players, heating oil distributors included, who had a need to hedge their fuel costs, the heating oil market had commercial traders on both side of the equation. Crude oil, in contrast, is bought only by refiners and is sold by a small number of large producers, none of whom can use the futures as a hedge for their large production.

Fourth, heating oil enjoyed a huge advantage over gasoline as the underlying commodity for a futures contract. Gasoline is a blend, and a relatively unstable one at that. It cannot be stored for long periods of time without the ingredients degrading in oxygen or "varnishing out" to the bottom of the storage tank. The major petroleum marketers, all of whom had spent years trying to convince motorists there were differences between their gasoline and that of others, resisted the idea that gasoline was a "commodity." It is instructive to note the present principal futures contract for gasoline, the RBOB (reformulated blendstock for oxygenate blending) contract, is the fourth major contract in the history of gasoline futures. The original contract was for leaded gasoline, the second was for unleaded gasoline, the third was for reformulated unleaded gasoline and the fourth is for RBOB.

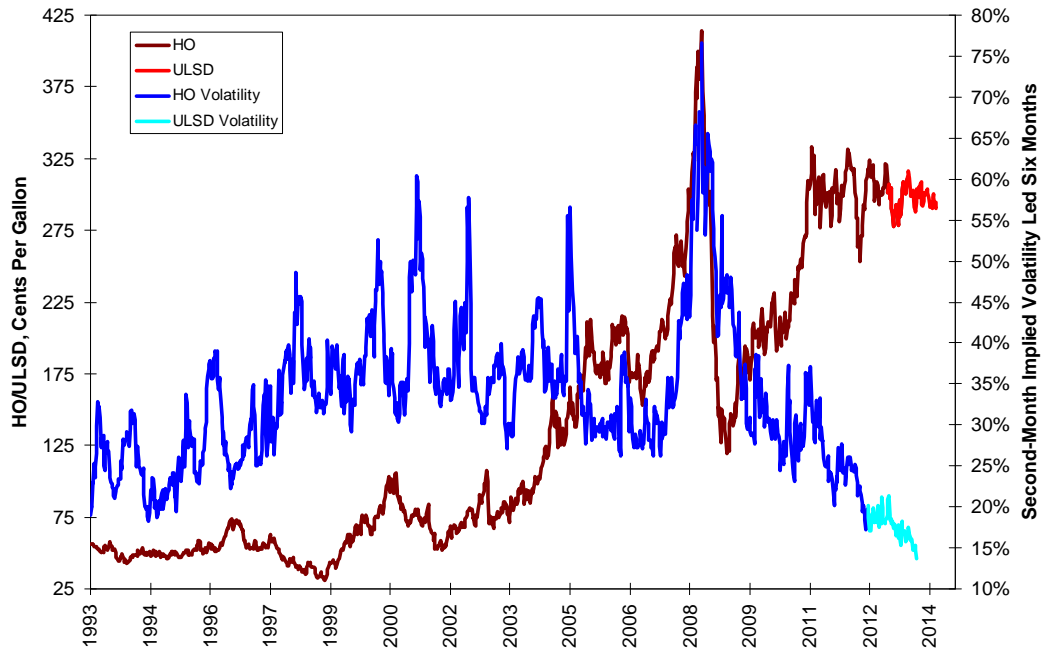
Finally, the winter of 1978-1979 was third consecutive one with subnormal temperatures in the U.S. Northeast, the principal heating oil-consuming region, and followed the passage of the Natural Gas Policy Act of 1978, which laid out a schedule for natural gas price decontrol. This attracted both the interests of speculators and of heating oil distributors interested in offering fixed-price heating oil contracts to their customers. The overthrow of the Shah in Iran and the move to decontrol crude oil prices by the new Reagan administration followed in short order. From a trading point of view, if nothing else, this was a terrific environment for a new futures contract.

Volatility

Heating oil, perhaps more than any other physical commodity future was used by industry hedgers. This was visible in the demand skew of its option volatility; prior to the financial crisis, it jumped in response to rising prices. The buyer was the more anxious party, with the buyers primarily being heating oil distributors and diesel fuel users.

The pattern changed after the 2007-2008 price spike and the financial crisis-induced collapse in prices. Much of the post-crisis change in behavior is attributable to regulatory changes, increased capital requirements for bank traders and simple hesitance on the part of strapped fuel buyers to incur the financial costs and risks associated with hedging. Moreover, the ferocity of the 2008-2009 downturn led many hedgers to believe capping prices in the 2009-2011 recovery was nothing more than buying a new market high. The decline in volatility continued into the 2013 switch from HO to ULSD.

Changing Patterns Of Price And Volatility

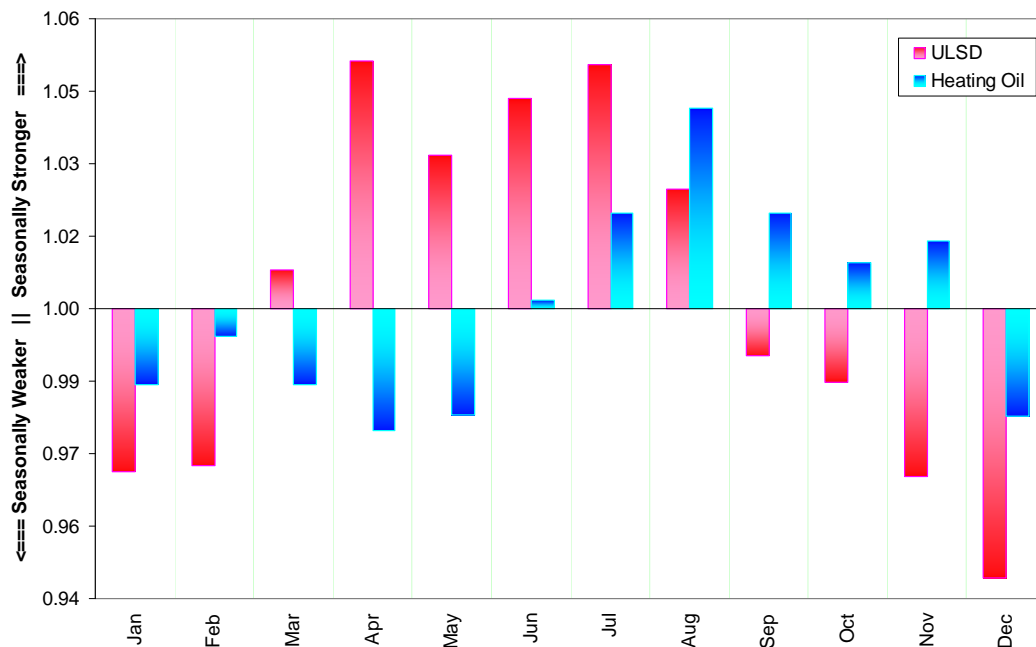


Seasonality And Hedging

The forward curve of heating oil futures was highly seasonal, rising in a deep carry structure to a peak in January and then falling in backwardation into August. That curve allowed fuel buyers to build and hedge inventories going into the winter months.

The seasonality and forward curve of ULSD are different than heating oil's. If we calculate the average monthly seasonal factors for the two markets' New York Harbor prices, we see how ULSD is stronger during the late spring and early summer and weaker during the late autumn and early winter while heating oil was stronger during the late summer and weaker in the late winter and early spring.

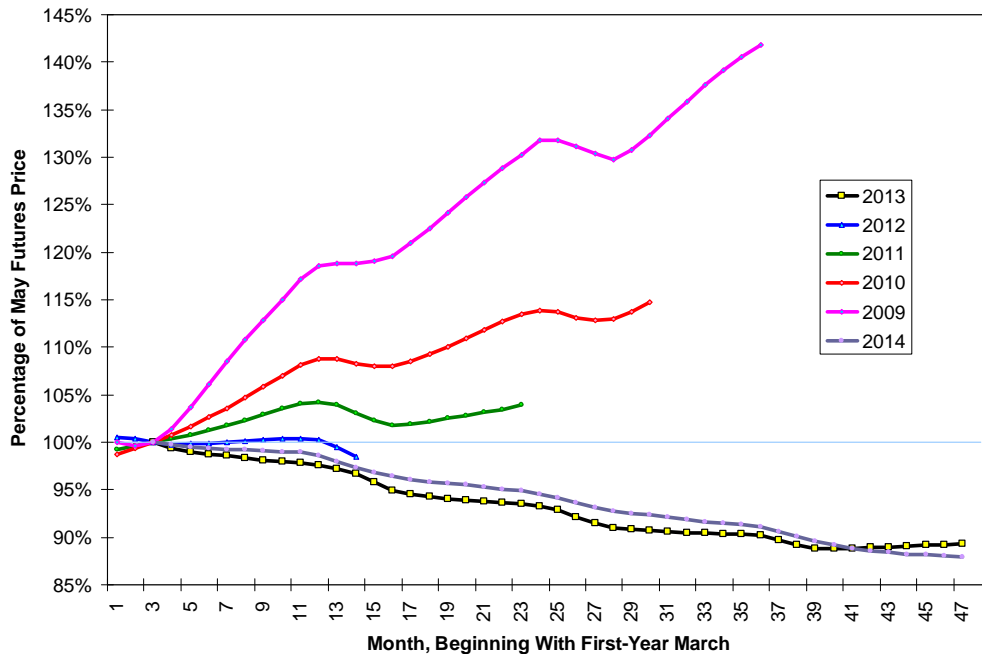
Seasonal Factors For NYH Ultra-Low Sulfur Diesel Fuel And Heating Oil



The change in the underlying commodity had a profound effect on the forward curve of the futures market. ULSD buyers, unlike HO buyers, are less inclined to build and store inventories. Their more-constant demand leads them to adopt more of a just-in-time inventory policy wherein they remain floating on the price until delivery is taken. Suppliers eager to protect themselves from lower prices cannot sell into the front-month futures as a hedge; they must sell into the back months, often at a discount to the spot price. This combination of behavior from both buyer and seller should lead to backwardation, and it did immediately.

If we map futures chain prices as a percentage of May contracts for years 2009-2014, we see strong carry structures from 2009-2011 going forward. The pattern for 2012 was flat. The patterns for both 2013 and 2014, the first two years of ULSD futures trading, show very distinct backwardation structures.

ULSD Futures Trade In Backwardation



Implications Of Backwardation

All backwardated markets with just-in-time inventory policies are exposed to a risk of price spikes produced by logistical disruptions, demand surges or supply shortfalls. Fuel buyers can sidestep these by buying forward in the discounted back months and hedging this flat-price exposure with put options or, alternatively, they can buy call options on those forward months. Many commercial buyers recoil at the thought of taking these actions as they involve the worst risk of all, career risk if they are wrong on the hedge and lose money.

The picture is opposite for ULSD suppliers. They are facing hedge costs of selling forward into the backwardated curve when they used to be able to recoup some of their costs by selling forward into a carry market. They can solve their problem with put options, but the same career-risk comment made above applies.

Backwardation involves a strange commonality of opinion between buyer and seller: Both believe the current price is unsustainably high and likely to drop in the future. As a result, buyers do not want to cap their costs and sellers do not want to floor their prices. The net result is an underinsured and therefore more volatile market, one that will reward speculative traders at the expense of commercials.