You Can Always Get What You Want

Liquidity, with the possible exception of dormitory pranks involving dishes of warm water, is desirable. Defined as the capacity of a market to absorb volume with the minimum effect on price, its absence is painful for traders who must battle the nature of the marketplace as well as the underlying market itself. Liquidity begets liquidity, however, and commercial players who lament thin markets while doing nothing to support them have only themselves to blame when they lose an exchange-traded instrument with all of its advantages of standardization and transparent price discovery.

Two contracts from the grains and oilseeds markets will be discussed in turn for their unique challenges. The first is the durum wheat contract on the Minneapolis Grain Exchange (MGE), and the second is the palm oil contract on the Kuala Lumpur Commodity Exchange (KLCE).

If You Try Sometime...

Durum, grown in the northern plains of the U.S. and adjacent regions of Canada, and in irrigated desert land in California, is the high-quality wheat used in pasta manufacture. The MGE initiated futures and options on durum in February 1998. Open interest in the futures has fallen from early summer levels of just over 1,000 contracts, or 5 million bushels, to autumn levels of just under 600 contracts, or 3 million bushels, so establishing a commercial position in the futures would be difficult.

The options on durum, which are always our desired hedge instrument, are even less liquid. However, illiquid futures frequently can be traded in more significant size in a spread against an established liquid contract, such as the soft red winter wheat (SRW) contract on the Chicago Board of Trade (CBOT). We will take advantage of this property to back into a call option on durum with the following two-step trade:

1. Buy call options on CBT SRW
2. Sell CBT SRW futures / buy MGE durum futures

Since we can restate a short future on the CBT as a long Chicago put (CP) and a short Chicago call (CC), and a long future on the MGE as a long Minneapolis call (MC) and a short Minneapolis put (MP), we have the following combination:

$$CC + (CP-CC) + (MC-MP)$$

which reduces to:

$$MC + (CP-MP),$$

which is a MGE durum call with a put spread between SRW and durum. We now have to determine whether this put spread has an acceptable basis risk.

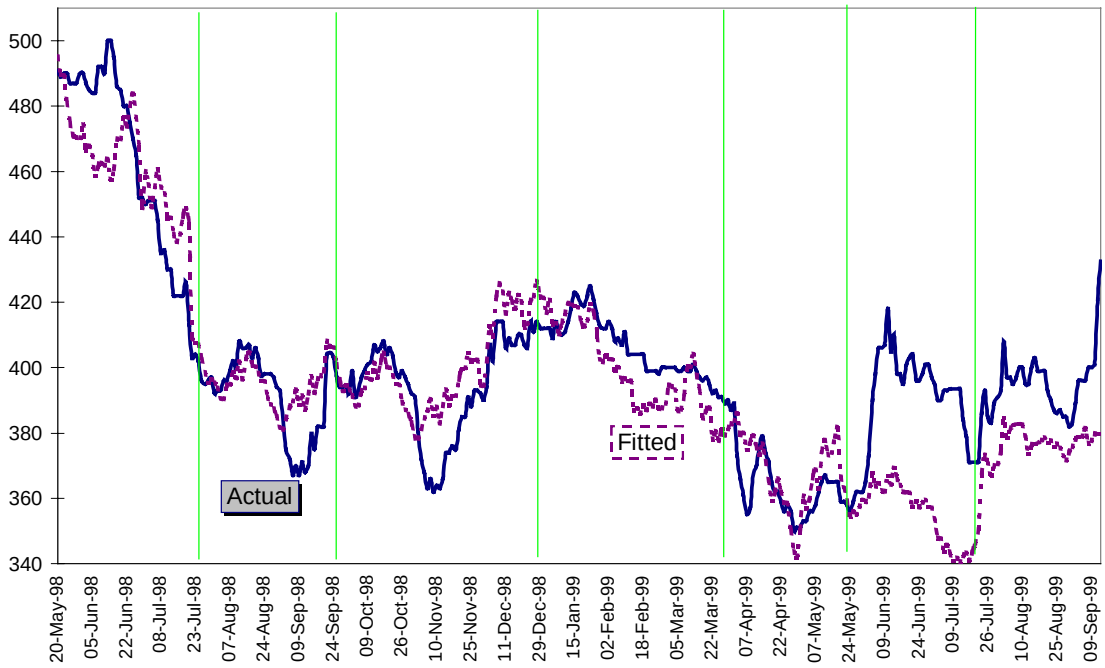
Regression analyses were run on all contract pairs from July 1998 to September 1999 (the initial contract, May 1998, has only 67 observations, and therefore is not useful statistically). The following relationships were produced:

July 98: Durum = 89.0 + 1.34 * SRW, r^2=.82
Sep 98: Durum = 165.0 + 0.91 * SRW, r^2=.91
Dec 98: Durum = 112.9 + 1.05 * SRW, r^2=.91
Mar 99: Durum = 68.3 + 1.15 * SRW, r^2=.92
May 99: Durum = 30.1 + 1.26 * SRW, r^2=.89
July 99: Durum = 117.3+ 0.96* SRW, r^2=.65
Sep 99: Durum = 223.8 +0.57 * SRW, r^2=.34 (to September 14, 1999)

We can splice together the front month MGE durum futures contracts and the corresponding fitted data from the regression models above to decide whether the basis risk between the two markets is acceptable. Acceptability hinges on three criteria:

1. Is the model's standard deviation of spliced errors, $0.1739, manageable in comparison to the price volatility of durum?
2. Does this error term compare favorably to the cost of execution in an illiquid market?
3. Can we arrive at a plausible fundamental explanation for the unmistakable degradation in the model's quality of fit over the summer of 1999?

Actual And Fitted Durum Prices:
Spliced Continuation Series



The third question is both the simplest and most important for us to answer. The principal wheat markets, SRW included, were coming to the end of a multiple-year bear market over the summer, but durum, more of a specialty crop, barely took out 1998 lows. The expected return of world wheat markets to a more normal supply/demand balance should restore durum and SRW to a more stable statistical relationship.

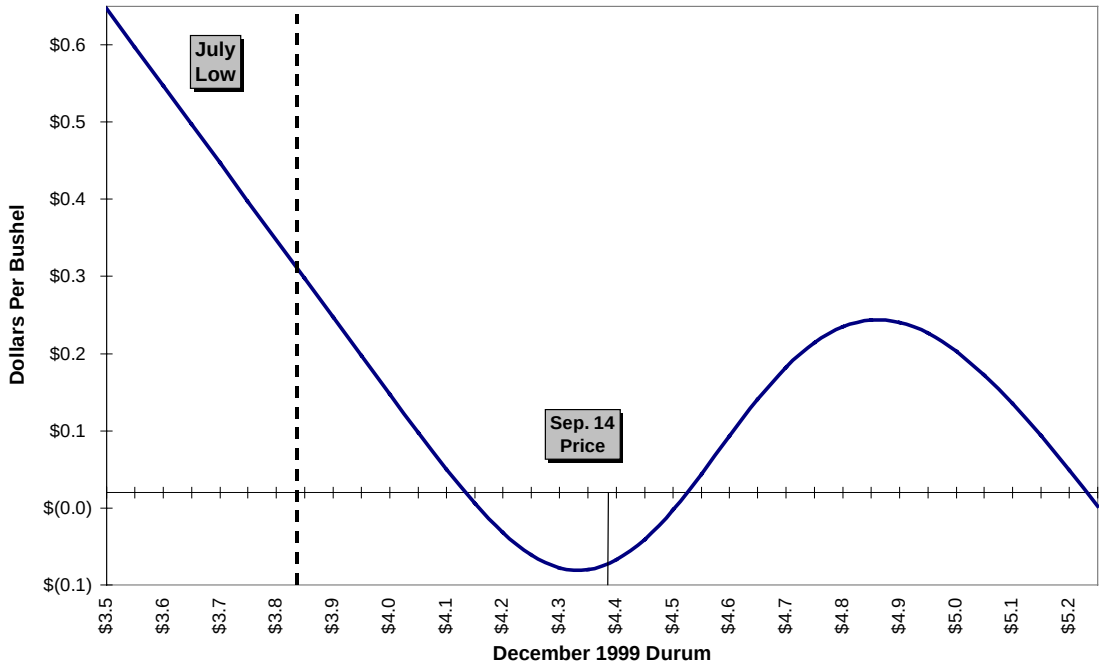
The answers to the first two questions are and must be matters of policy for commercial hedgers, but we will submit the hedge costs are well within the bound of any reasonable risk management program. Moreover, we can reduce the risk further by using the Dynamic Option Selection System, (DOSS, see "The Dynamic Option Selection System," John Wiley & Sons) which produced the following capping recommendation for 100,000 million bushels of December 1999 durum on September 14, 1999:

Buy 56 Dec SRW $2.90 puts at $0.1275 and sell 56 Dec SRW $3.30 puts at $0.44
Sell 20 December SRW futures and buy 20 December durum futures

The incremental advantage of this trade to the base case of simply buying 20 December durum futures outright is depicted below with the SRW/durum spread held constant and three weeks left

in the trade. Under these conditions, the disadvantage of the DOSS SRW hedge to the durum futures hedge never exceeds $0.10 per bushel, which is a small price to pay for liquidity.

Incremental Advantage: DOSS Trade To Durum Futures



…You Just Might Find...

Open interest on the KLCE palm oil future is hovering just over 5,000 contracts. With each Malaysian ringgit-denominated contract representing 25 tonnes of oil, this open interest is a scant 125,000 tonnes; by comparison, the open interest on the CBOT's beanoil contract represents over 3.84 million tonnes. Yet palm oil is a critical component of the world's edible oils market (see "Canadian Content," *Futures*, April 1999).

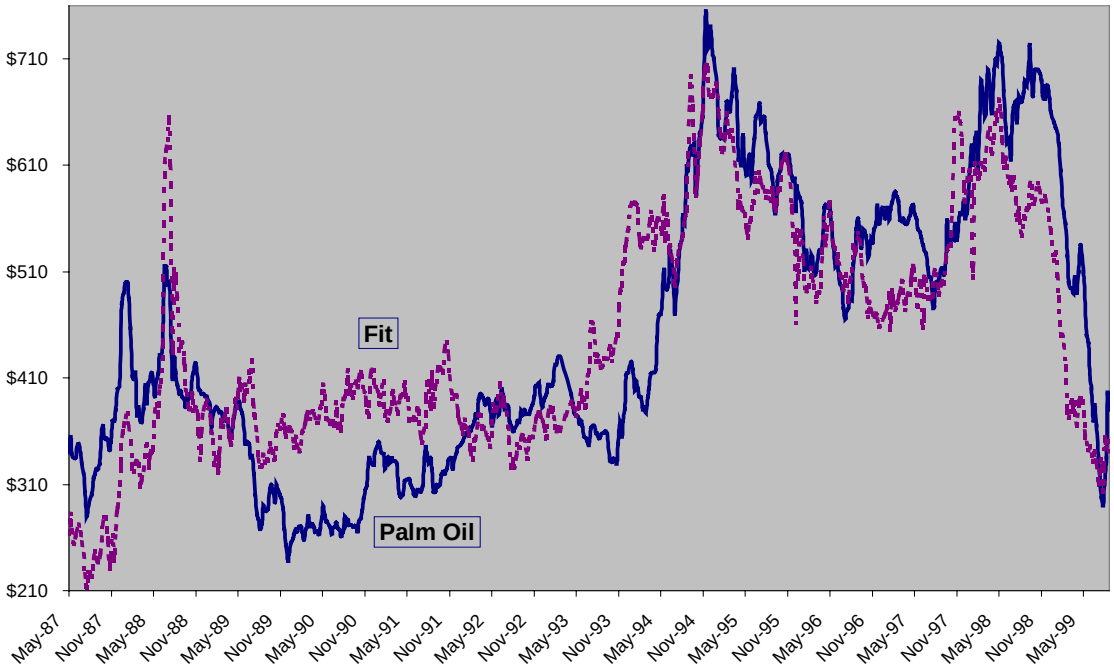
The most direct comparison between competing oils can be found at Rotterdam, where *Oil World* calculates a weekly U.S. dollar per ton price. The price of rapeseed oil, similar to canola, tracks beanoil very closely, but palm oil prices have diverged frequently from beanoil over the thirteen years for which data are available.

A simple linear regression model between the two series is:

Palm Oil = -147.5 + 1.19 * Soybean Oil; R^2=.685

A graph of the actual and fitted data of this model is depicted below. As a side note, the introduction of other oils, such as canola or sunseed oil, does not improve the basic fit; indeed, the statistical colinearity introduced by these closely related commodities actually degrades the fit.

Palm Oil, Actual And Fitted Values, USD/Ton



The relationship between the two oil markets appears to have tightened considerably in the second half of this decade. The 1988 price spike in soybean oil was not reflected in the price of palm oil, and the price of soybean oil remained consistently strong during the 1989-1993 period relative to palm oil. Since the, the two markets have tracked each other reasonably well, which is surprising considering the considerable event risk over the past three years: The collapse of the Malaysian ringgit, El Nino, and the recent La Nina price collapse.

…You Get What You Need

The important question always is "are we hedging the dimes or hedging the dollars?" If the former obtains, then soybean oil is not an adequate hedge instrument for palm oil; the unique growing season and geographic location of the palm oil market means that palm oil should be hedged with palm oil, either in the cash market or in futures. If we are hedging the broader price moves, the dollars, then soybean oil is an adequate hedge.

Commercial traders and their managers frequently forget whether they are trying to eliminate every minor fluctuation in their cost or revenue structure, or whether they are protecting against a risk-of-ruin scenario. If minor fluctuations truly are important, then basis risk must be eliminated to the maximum extent possible, and generally this means participating in an OTC derivative market and accepting its costs and credit risks. Otherwise, participants in a market – including, ironically, OTC market-makers whose ability to offset their residual risks is enhanced by liquid exchange-traded markets – may be better off accepting basis risk in return for the advantages of central price discovery and clearinghouse credit quality inherent in a futures market.