

Hedging Opportunities for Soybean Processors

This is the second in a series of articles explaining how various segments of the soybean industry may utilize the futures market both for risk protection and profit. It is an excerpt from "The Soybean," a recent booklet published by Merrill Lynch, Pierce, Fenner and Smith Inc.

Processors have a different set of hedging problems than do elevators or exporters. The objective of the processor is to buy cash beans, sell cash oil and cash meal, at as wide a gross margin as possible. When he has accomplished all three legs, he has set or "fixed" his gross margin. Because of different demand rates for the two products, potentially different sets of market factors in beans as compared to products, and the very seasonal nature of bean supplies compared to oil and meal production, the difference between the price of beans and the value of the products can vary widely during the season.

Because both the raw material, beans, and the finished products, oil and meal, are traded on futures markets, the soybean processor occupies a unique position among industrial enterprises in that he can, to some extent, choose a point in time and price at which to set his gross margin. Once the beans have left the farm, the processor and his margin are central considerations in the bean and product markets. To understand processor margins clearly is to understand a great deal about the structure of the bean market and demand, and how and why both operate as they do. Domestic processing is the major demand outlet for beans, but when one considers that the larger portion of the exported beans go for crush in countries where processing margins are related in a general way to domestic margins, it will be seen that most of the beans that are consumed are tied in some way to United States relationships. This should always be recognized; domestic crush and exports are related and should not be thought of as separate categories. It is true that in specific overseas locations, spot situations can influence processor profitability, whereas the same factor may not operate domestically. However, the free world protein demand is closely related to United States meal prices and availability and free world bean supplies almost totally depend on United States beans. Changes in domestic conversion relationships therefore influence processor profitability around the world.

Processors can "fix" margins in many ways, and most processors hedge in some or all of these ways at various times. Some examples:

- 1) Buy cash beans, simultaneously sell forward cash oil and meal, lagging product sales by about the amount of time it will take to get the beans to plant and run them through the extractor.
- 2) Buy cash beans, sell one product in the cash market, the other on the futures market, instead of both in cash, because at the moment the cash basis on one of the products is unsatisfactory; or sell both in futures if not satisfied with either basis. When cash products are sold (on basis) and the short hedges lifted, final conversion has been established.
- 3) Before cash beans become available, buy bean futures, sell oil and meal futures if the board relationship appears attractive based on historical experience. When cash beans are purchased, sell out the long bean futures; when the cash products are sold, buy back the product shorts. Note that the first part of this fixes irrevocably the futures portion of conversion, leaving open as uncertainties the basis on cash beans, oil and meal.
- 4) Sell cash products ahead of harvest and buy either bean futures against product sales if board conversion relationships look good or buy product

futures against product sales if conversion looks poor. Note that this latter course forestalls fixing the futures part of conversion but fixes the basis on product or products.

- 5) Purchase cash beans, sell bean futures as a hedge rather than cash product or product futures because margins are unsatisfactory. When conversion becomes satisfactory, transfer bean hedges into product hedges or cash product sales.
- 6) Purchase cash beans, sell bean futures as a hedge. If conversion does not become satisfactory before products are sold, then buy oil and meal futures when the products are sold. This leaves the company long product futures, short bean futures, with basis fixed on everything but futures conversion still open, and also leaves them hoping for a relative improvement in the futures relationship between products and beans.

This last position, long product futures—short bean futures, (#6), is frequently also taken on by speculators, and is generally referred to as "reverse conversion." Speculators trade this spread when margins are unsatisfactory, working on the theory that poor margins will not persist indefinitely.

Although some individual processors and traders may use different estimated yields and actual yields vary from time to time, the conventional method of calculation is to express product value using yields of 11 pounds of oil and 48 pounds of meal from one bushel of beans and compare that figure to bean cost. The difference between products over beans (cents per bushel), or products under beans (cents per bushel), is then a conventional shorthand version of a very complex economic relationship. Note further that bean futures are in-store Chicago, while product futures are in-store (oil), or FOB cars (meal), at processing plants throughout the Upper Midwest, so this shorthand view can only be accidentally the same as conversion at plant location.

Processor Margin "Board" Computation

Date: January 10, 1969		
Jan. oil @ 8.52¢	=	\$.9372
Jan. meal @ \$71.25	=	1.7100
PRODUCT VALUE TOTAL	=	\$2.6472
Jan. beans @ \$2.60 bu.	=	2.6000
SPREAD	=	plus \$.0472

The calculations above are arrived at as follows: multiply the price of oil futures by 11, which is roughly the number of pounds of oil secured from a bushel of beans. This gives the value of the oil portion. Divide the meal futures price, which is per ton, by 2,000 to convert to pounds, then multiply by 48, which is close to the meal yield per bushel. (Faster calculation: multiply by .024). The oil value is then added to the meal value to show total product value. The product value is then compared to the soybean futures price (Fig. 1). If the total sale value of the products is above the price of the beans, then conversion is said to be plus. If the total sale value of the products is below the price of the beans, then the conversion is said to be minus. Obviously, all this ignores cost of crushing and return for hull meal and mill feed. (Actual processor yields average about 10.60 to 11.00 pounds oil and 47.00 to 47.50 pounds meal.) Using these

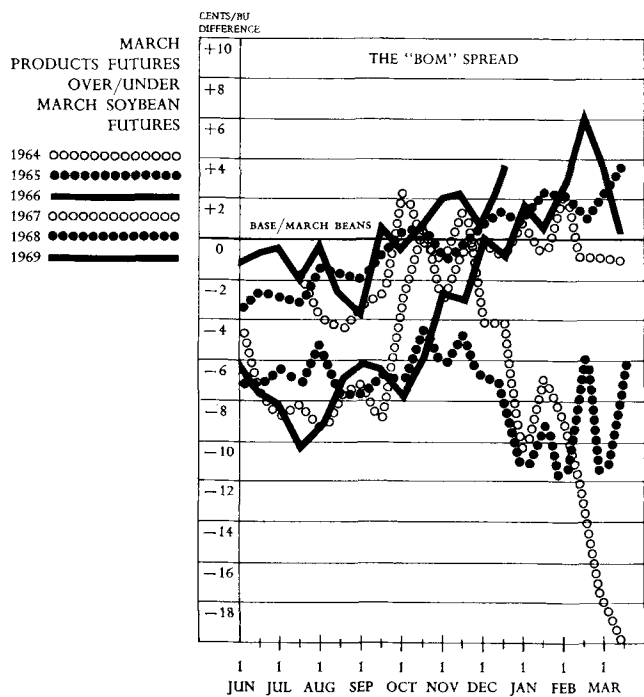


FIG. 1

true yields, a contract of 5,000 bushels of beans will yield 54,500 to 55,000 pounds of oil (somewhat over $\frac{1}{10}$ ths of a 60,000 pound contract of oil) and 235,000 to 237,500 pounds of meal (almost $\frac{1}{10}$ ths of a 200,000 pound contract of meal). Since bean vs. product spreads are traded because of a hoped-for processor response, the bean-to-product position should be balanced as closely as possible with processor results. Therefore, in line with the above yields, when trading in small increments, one contract of beans is equal to approximately one contract of oil plus approximately one of meal. A closer balance would be 5 contracts of beans (25,000 bushels) vs. 5 oil and 6 meal; a closer balance yet would be 10 contracts beans vs. 9 oil and 12 meal. Note then that 10 contracts beans vs 10 oil plus 10 meal is actually 1 oil over proper balance and 2 meal under proper balance.

A significant problem in mill management decision-making revolves around what to do when margins are poor, and various companies have strikingly dissimilar responses. Management struggles to fix as much crush as possible when margins are good, as little as possible when margins are poor. These latter periods almost in-

variably produce a great deal of talk about processor shutdowns. Some mills close absolutely; some close part way; some keep going full blast; some seem to base their decision on whether they have profits in cash positions or futures positions sufficient to offset crushing losses; some are guided by forward futures or cash profitability indications and others have inventories of beans that must be crushed.

The presence of futures for all three items in the complex allows long or short positions to be taken "directly" or "indirectly" in both beans and products. For example: a direct short in beans means short beans; an indirect short in beans means short both products; a direct long in beans means long beans; an indirect long in beans means long both products; a direct long in oil means long oil; a direct long in meal means long meal; an indirect long in oil means long beans, short meal; an indirect long in meal means long beans, short oil; an indirect short in oil means short beans, long meal; and an indirect short in meal means short beans, long oil.

Only the last four may require explanation. If the total sales value of the finished products of *any* manufacturing enterprise is low in relation to raw material cost, then gross margin is poor; said another way, end-products in total are underpriced against raw materials; said still a third way, raw materials are over-priced in end-product terms.

If we fix these concepts firmly in mind, and their accompanying obvious converses about good margins, then the following comments about direct and indirect longs and shorts as they apply to both hedges and speculations will be somewhat easier to understand. Since beans contain only oil and meal, if one is long beans one is long both products. But if beans are overpriced against products, then one is likely to be better off to be long the under-priced end of the complex, i.e., long products, than to be directly long the overpriced end, i.e., beans. Both cases are fairly obvious. Somewhat more complex is the next step, which is indirect product positions. If bearish on oil, but the product total is badly underpriced vs. beans, then beans should be sold short, then meal bought, leaving one in effect, short oil. This can avoid exposure to the possibility of great improvement of both products which might come from shutdown talk, which even in a bearish situation might cause oil firmness. If bullish on meal means when margins are poor, one should almost always buy both products instead of buying beans. Over the long term this will give much greater insulation against being wrong and much better results if right.

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A.I.D., L.I.F.E., Others Need Consultants

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