



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# Use of Soybean Futures Markets by Large Processing Firms<sup>1</sup>

Jerald A. Gunnelson and Paul L. Farris

Shares held by three large processing firms of open-interest futures positions in soybeans, soybean meal, and soybean oil varied substantially among commodities and individual contract months during 1957-66. Concentration was frequently higher in soybean meal than in soybean oil, and lowest in soybeans. Higher levels of concentration appeared more often in futures contracts 1 to 3 months before the delivery month than in more distant months. Net long, or speculative, positions of the three firms tended to increase as changes in selected futures price relationships increased prospects for price gains on the unhedged positions.

Key words: Concentration; futures trading; hedging; pricing; risk; soybeans; speculation; structure.

Selling and buying commodities for future delivery is an integral part of the business operations of firms engaged in processing and merchandising soybeans and soybean products. Two aspects of futures market participation by leading soybean processing firms were examined in this study: (1) The relative importance of three large firms in individual futures contract months for soybeans, soybean meal, and soybean oil; and (2) factors associated with total short positions (cash and futures) and net long positions of the three firms in the three commodities combined.

The three firms were the largest U.S. soybean processors in the latter part of the period studied. Together they operated about 40 percent of industry capacity in the mid-1960's. Each was integrated vertically to some extent and also engaged in other activities related to grain processing and marketing, both domestically and internationally.

Midmonth data on the cash and futures positions of the three firms in soybeans, soybean meal, and soybean oil were provided by the Commodity Exchange Authority, U.S. Department of Agriculture, on a combined summary basis to avoid disclosing information for individual firms. All of the position data were, therefore, aggregates for the three firms. Futures market open-interest totals were obtained from published statistics released by the Commodity Exchange Authority. The data were derived from daily reports of traders to the Commodity Exchange Authority as of midmonth. Price data were obtained from Chicago Board of Trade yearbooks. The period selected, October 1957 through

September 1966, was one of active futures trading in all three commodities, soybeans, soybean meal, and soybean oil.

## Relative Importance of the Three Firms

The three firms apparently used the futures markets primarily to hedge their price risks in carrying soybean stocks and making purchase commitments, so their largest open futures positions were primarily on the short side of the market. The combined short positions of the three firms accounted for significant proportions of the open interest in several individual futures contract months during the period (table 1). Their dominance was greatest in the soybean meal market, as reflected in the fact that in nearly two-thirds of the months in which a short position was reported, the three firms accounted for 20 percent or more of the total short open interest. In nearly one-fifth of the months, they held 50 percent or more of such open interest. There were also several months in which the three firms held substantial shares of the open interest on the long side of the meal market.

The three firms were less dominant in the oil than in the meal markets, although they frequently held a relatively large share of the short open interest in oil. For example, in 36 percent of the months in which a short open interest in oil was reported by the three firms, their share amounted to 20 percent or more of the total short open interest.

The relative positions of the three firms were much lower in the soybean than in the product markets. Nevertheless, in nearly 40 percent of the months in which they held a short position in soybeans, the three firms accounted for 20 percent or more of the short open interest.

<sup>1</sup>Purdue University Agricultural Experiment Station Journal Paper No. 5020. Based on research conducted by the Department of Agricultural Economics, Purdue University, in collaboration with the Marketing Economics Division, Economic Research Service, U.S. Department of Agriculture.

Table 1. Distribution of contract months according to share of open interest held by three large soybean processing firms on midmonth reporting dates, by commodity and futures position, October 1957-September 1966<sup>a</sup>

Share of open interest held by three firms	Commodity and position							
	Soybeans		Soybean meal		Soybean oil		Total	
	Short	Long	Short	Long	Short	Long	Short	Long
<i>Percent</i>	<i>Number of individual contract months</i>							
0 > 10 .....	84	121	60	120	102	213	246	454
10 > 20 .....	77	37	48	84	98	81	223	202
20 > 30 .....	68	6	63	41	74	25	205	72
30 > 40 .....	28	2	53	30	39	9	120	41
40 > 50 .....	5		28	21	26	2	59	23
50 > 60 .....			21	3	22		43	3
60 > 70 .....			19	6	9		28	6
70 > 80 .....			13	2			13	2
80 > 90 .....			3	1			3	1
Total contract months with positions reported by three firms .....	262	166	308	308	370	330	940	804
Contract months with no positions reported by three firms .....	407	503	422	422	348	388	1,177	1,313
Total contract months with open interest reported to CEA .....	669	669	730	730	718	718	2,117	2,117

<sup>a</sup> The total number of contract months for a commodity is the number of different delivery options with open interest in October 1957 added to the number with open interest in November 1957, and to the number with open interest in successive months to and including September 1966. This sum differs by commodity.

From the market standpoint, these percentages actually *understate* the concentration of the three largest holders of open interest in several individual contract months. There were times when one or more of the three firms included in the study was not one of the largest three in the market. One or more of the three processors may have had no holdings at all on a particular side of a given contract, so that only one or two of the included firms accounted for the percentages shown. In some instances, the summarized data showed substantial shares on both sides of a given contract month. This indicates that at least one firm was on the short side and the other one or two on the long side, except for the possibility that a firm might have held both short and long positions in a particular contract.

For all futures contracts taken together, by commodity and position in the market, the share held by the three firms was lower than in some of the individual contract months. This reflects the tendency of the three firms, at any given time, to emphasize particular

contract months rather than to distribute their purchases or sales equally among all available contract months. For example, the share held by the three firms of the total combined short positions in all contract months for soybeans did not exceed 14 percent on any midmonth reporting date. For soybean meal and soybean oil, the maximum short open-interest shares held by the three firms were 56 and 41 percent respectively. On the long side of the market, the maximum shares held by the three firms of the combined positions were 10 percent for soybeans, 42 percent for soybean meal, and 27 percent for soybean oil.

Owing to the relative importance of the three firms in futures markets, their positions are presented in greater detail in appendix tables 1 through 6. The individual contract month positions by level of concentration are shown for both the short and long sides of the market for each commodity, and by year, month, future contract month, and number of months before contract termination. The comparisons in table 2 indicate the

significance of differences in levels of concentration according to period, season, future contract month, and nearness to contract termination.

When sorted by period, low concentration levels were relatively more frequent in 1961-66 than in 1957-61 for

the short side of the soybean market. High concentration levels were relatively more frequent in the later period for the long side of the soybean meal market and the short side of the soybean oil market.

Differences from the October-December quarter were

Table 2--Further distributions of contract months shown in table 1 by level of concentration and by period, quarter, delivery month, and months before contract maturity<sup>a</sup>

Comparison bases	Soybeans				Soybean meal				Soybean oil			
	Short		Long		Short		Long		Short		Long	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
<i>Number of individual contract months</i>												
Period:												
Oct. 1957-Sept. 1961 .....	59	55	51	12	84	37	98	15	116	35	127	22
Oct. 1961-Sept. 1966 .....	102	46**	70	33	140	47	106	89**	84	135**	167	14
Total .....	262		166		308		308		370		330	
Quarter:												
Oct.-Dec. ....	56	30	39	9	57	28	54	24	53	50	84	10
Jan.-Mar. ....	29	36*	25	12	51	24	50	25	43	42	68	6
Apr.-June ....	33	24	29	8	63	17	52	30	44	32	59	7
July-Sept. ....	43	11	28	16	53	15	48	25	60	46	83	13
Total .....	262		166		308		308		370		330	
Delivery month:												
October .....					20	14	22	16	18	25	36	14
November .....	49	7	27	28								
December .....					30	9	23	11	35	8**	36	5
January .....	22	18*	24	9*	29	7	12	24*	17	29	32	3
March .....	24	20*	21	3**	33	14	40	6**	24	26	41	1*
May .....	34	23**	24	4**	30	18	32	11	39	26	53	3*
July .....	22	30**	17	0**	43	10*	39	15	35	26	48	2*
August .....	4	3*	4	1*	30	3*	19	18	9	12	10	8
September .....	6	0	4	0**	9	9	17	3*	23	18	37	1*
Total .....	262		166		308		308		370		330	
Months before contract maturity:												
0-3 .....	75	70	70	24	125	51	106	48	100	111	139	21
4-9 .....	86	31**	51	21	99	33	98	56	100	59**	155	15
Total .....	262		166		308		308		370		330	

<sup>a</sup>In each instance, low concentration is defined as under 20 percent of the total and high concentration as equal to or over 20 percent of the total, except for long soybean positions which are divided at the 10 percent level, and long and short soybean meal positions which are divided at the 40 percent level. In each section of the table the distribution among concentration levels for the first row was compared with the corresponding distribution for each of the remaining rows using the t-test based on the standard error of the difference between two proportions in two different frequency distributions. Those rows differing significantly from the first row in each section are marked with asterisks—one asterisk for the 5 percent level of significance and two asterisks for the 1 percent level. Italics indicate that the number of observations is significantly larger than expected.

Source: Appendix tables 1-6.

not significant except for the January-March quarter on the short side of the soybean market, when high concentration levels were relatively more frequent.

The various delivery-month distributions of concentration levels were compared with the November contract for soybeans and the October contract for soybean meal and oil. In nearly all delivery months for soybeans, concentration was relatively lower in the November contract than in other contracts on the short side of the market, but higher in the November contract than in other contracts on the long side.

For soybean meal, low concentration was relatively more frequent in July and August contracts than in the October contract on the short side of the market. On the long side of the soybean meal market, high concentration was relatively more frequent in January than in October but less frequent in March and September.

For soybean oil, low concentration was relatively more frequent in the December than in the October contract on the short side of the market. Low concentration was also relatively more frequent in the March, May, July, and September contracts than in the October contract on the long side.

The comparisons by nearness to contract maturity showed that more positions were held in contracts up to 3 months away than in more distant contract months. The concentration levels were relatively lower in the more distant months than in the near months for the short side of the soybean and soybean oil markets.

### Factors Associated with Short and Long Positions

Emphasis in the second part of the study was focused on behavior of the firms in handling risk associated with their soybean and soybean products positions. As we have seen, the three processing firms were particularly active on the short side of the soybean and soybean product markets, which is consistent with their need to hedge against the risk of price change on cash stocks and purchase commitments for their processing and merchandising operations.

Two multiple regression models were developed for the purpose of determining the importance of various factors hypothesized to be associated with total short and net long positions of the three firms. The variables are described in table 3 and the results presented in table 4.

In equation 1, the dependent variable was total short positions of the three firms. Total long positions of the three firms explained a substantial portion of the variation in their combined short positions, as reflected

in a simple coefficient of determination of 0.81 between the total long and total short data series. However, in addition to the total long position, certain price relationships appeared to have significant influences, and there was a definite seasonal pattern. When variables representing these influences were included, along with the combined long position, the multiple coefficient of determination was 0.93.

To focus more directly on the effects of these other factors, equation 2 was developed. The total short position was subtracted from the total long position, leaving a net long, or exposed, position so far as positions in the three commodities were concerned. The average net long position for the three firms during 1957-66 amounted to about 10 percent of their average total long position. In about one-fourth of the months, the net long position was 25 percent or more of the total long position. In another one-fourth of the months, the three firms as a group were net short.

The net long position became the dependent variable in equation 2, and the same other factors used in equation 1, excluding the total long position, were included as hypothesized explanatory variables. The same pattern of results appeared in equation 2 as in equation 1 except that the signs of the coefficients were opposite, which is consistent with the ways in which the dependent variables were described.

One of the important price relationships associated with the net long position was the near futures minus the support price for soybeans. It was expected that as this price differential increased the net open position would decrease, because of increasing price risk. When actual or near futures prices are near the Government price support, the risk of further price declines is very low. Upward price movements would then be much more likely than a price decline below the support level. A price advance would give a holder of unhedged stocks an opportunity to make a speculative gain. The regression coefficient for this variable supports the hypothesis, and it is consistent with Allen Paul's finding that hedging is small when prices are near the support level. "As soybeans rise above supports, the hazards of loss increase and processors hedge more."<sup>2</sup>

The effects of the storage price spread on the net long position for soybeans were different from those for the products. A wider storage price spread (that is, the distant futures price minus the nearby) was inversely related to the net long position. The reason for this inverse association would appear to be similar to the

<sup>2</sup>Allen B. Paul, "Pricing Below Cost in the Soybean Processing Industry," *Jour. Farm Econ.*, Vol. 48, No. 3, Part II, August 1966, p. 17.

Table 3.—Variables used in the regression analyses

Variable	Description
Combined positions of three large soybean processors:	
Total long position . . . . .	Physical stocks of soybeans, soybean meal, and soybean oil, plus soybean purchase commitments plus long positions in the futures markets for soybeans, soybean meal and soybean oil, in thousand bushels of soybeans. (Soybean meal and soybean oil were converted to soybean equivalents.)
Total short position . . . . .	Advance sales of soybeans and soybean products to cash customers plus short positions in the futures markets for soybeans, soybean meal and soybean oil, in thousand bushels of soybeans. (Soybean meal and soybean oil were converted to soybean equivalents.)
Net open position . . . . .	Total long position minus total short position.
Near futures minus support price, soybeans . . . . .	The midmonth closing price for soybeans in the nearest futures trading minus the national support price for soybeans, in cents per bushel.
Soybean storage price spread . . . . .	The midmonth closing price for soybeans in the trading month 6 months away from the nearest futures trading month minus the midmonth closing price in the nearest futures trading month, in cents per bushel.
Soybean meal storage price spread . . . . .	The midmonth closing price for soybean meal in a trading month 5 to 8 months away from the nearest futures trading month minus the midmonth closing price in the nearest futures trading month, in dollars per ton.
Soybean oil storage price spread . . . . .	The midmonth closing price for soybean oil in a trading month 6 to 8 months away from the nearest futures trading month minus the midmonth closing price in the nearest futures trading month, in cents per pound.
Processing margin, near futures . . . . .	The processing margin based on the midmonth closing prices in the nearest futures trading month for soybeans, soybean meal, and soybean oil, in cents per bushel. (It was assumed that 1 bushel of soybeans yielded 47 pounds of soybean meal and 11 pounds of soybean oil.)
Supply of soybeans, beginning of marketing year . . . . .	Production plus stocks as of September 1, in million bushels.
Seasonal factors . . . . .	Zero-one variables for each month except September, which was arbitrarily selected as the base month.

inverse association observed for the price differential between the near futures and the support price. As more distant futures prices for soybeans rise relative to near futures, opportunities to make gains on unhedged stocks by selling distant futures appear. This would reduce the net long position. Moreover, the risk of an eventual narrowing storage price differential becomes greater as the spread widens.

The impacts of storage price spreads for meal and oil on net long positions, on the other hand, both tended to be opposite to that of the storage price

spread for soybeans. That is, high distant futures prices for the products relative to the near futures were associated with relatively high net long positions. Low distant futures prices for the products relative to the near futures were associated with relatively low net long positions.

A possible explanation for this finding might arise from differences in price risk associated with the relation of distant to nearby futures. That is, a high distant futures price for the products relative to the near futures, other things being equal, may have encouraged

Table 4.—Regression estimates of relations between hypothesized explanatory variables and summary of positions in soybeans, soybean meal, and soybean oil for three large soybean processors, midmonth observations, October 1957 through September 1966<sup>a</sup>

Item	Equation number and dependent variable	
	(1) Total short position	(2) Net long position
$R^2$ .....	.931	.578
$\bar{R}^2$ (corrected for degrees of freedom) .....	.915	.485
$d$ .....	1.12	1.19
Constant .....	-40,255.43*** (4.49)	35,771.00*** (3.78)
Explanatory variables, including $b$ 's with $t$ -values in parentheses:		
Total long position .....	.73 *** (9.54)	
Near futures minus support price, soybeans .....	174.27*** (3.30)	-132.60** (2.48)
Soybean storage price spread .....	1,360.56*** (5.13)	-1,492.53*** (2.48)
Soybean meal storage price spread .....	-2,922.21*** (4.27)	3,444.48*** (4.85)
Soybean oil storage price spread .....	-13,829.26*** (4.72)	10,099.24*** (3.37)
Processing margin, near futures .....	-1,011.87*** (4.68)	1,032.62*** (4.49)
Supply of soybeans, beginning of marketing year .....	42.97*** (3.05)	-12.77 (.99)
Seasonal factors (difference from September):		
October .....	-1,082.53 (.22)	6,264.77 (1.32)
November .....	7,827.33 (1.27)	3,564.26 (.69)
December .....	20,074.08*** (3.38)	-8,347.49* (1.76)
January .....	8,292.06 (1.35)	2,606.57 (.50)
February .....	23,606.33*** (4.20)	-16,521.86*** (3.14)
March .....	21,232.02*** (4.06)	-17,908.50*** (3.39)
April .....	24,769.60*** (4.39)	-23,606.63*** (4.00)
May .....	18,552.91*** (3.51)	-19,002.13*** (3.40)
June .....	5,553.46 (1.12)	-6,279.73 (1.19)
July .....	3,059.80 (.64)	-5,380.39 (1.06)
August .....	1,710.24 (.32)	-5,563.75 (.98)

\*\*\* significant at 1 percent level

\*\* significant at 5 percent level

\* significant at 10 percent level

<sup>a</sup>Based on 95 observations. On 13 of the 108 midmonth reporting dates, no open position was reported for the three firms.

at least two types of market activity. On the one hand, an increase in distant product futures selling probably occurred. But concurrently, near futures buying may have increased. Also, soybean buying was probably stimulated, in either the cash or futures markets, or both.

With future product prices rising, other things being the same, prospective processing margins would be increasing, and this would tend to encourage the selling of product futures and the purchase of cash soybeans. The potential would increase for speculative gain from acquiring and holding unhedged stocks of soybeans. There would be strong incentive to step up purchase of the raw input before its price would rise, or before future product prices and raw input prices would tend to return to a more usual, narrower relationship. This kind of market behavior would tend to increase the net long position.

With distant product futures prices low relative to near futures product prices, or possibly below the near futures, purchase of distant product futures and sale of nearby futures would be encouraged. Also, a decline in distant futures product prices relative to near futures, other things being the same, reduces distant futures processing margins. Processors might tend to reduce any unhedged long soybean positions.

The positive relationship between the processing margin based on near futures prices and the net long position is consistent with increasingly unfavorable prospects for speculative gains from holding unhedged soybean stocks. That is, a rising processing margin would probably encourage the selling of product futures and stimulate the acquisition of soybean stocks or the purchase of soybean futures. There would appear to be an increased speculative incentive to increase holdings of unhedged soybean stocks or to take long positions in soybean futures.

To point up the relative importance of changes in the different types of price relationships on the net long position, each price relationship coefficient was converted to the amount of change which would result in a 1 cent per bushel change in the value of soybeans (or equivalent in meal or oil). The 1 cent per bushel changes were associated with changes in the net long position as follows:

Change of 1 cent per bushel in value of soybeans (or equivalent in meal or oil) resulting from change in:	Associated change in net long position of the three firms in million bushels of soybeans (or equivalent in meal or oil):
Near futures minus support price, soybeans	-1.13
Soybean storage price spread	-1.49
Soybean meal storage price spread	1.47

Soybean oil storage price spread	.92
Processing margin, near futures	1.04

The results show that given changes in storage price spreads and the near futures processing margin had larger impacts on net long positions of the three firms than changes in the differential between the near futures and the support price, other things being equal. Among storage price spreads, changes in oil price differentials had a relatively smaller impact than changes in soybean or soybean meal storage price differentials.

The overall supply of soybeans was not strongly associated with the net long position of the three firms. The direction of the influence was negative, as expected. That is, a reduced soybean supply was associated with an increase in the net long position, probably reflecting the increased expectation of rising futures prices when soybean supplies are down and an increase in speculative gain from carrying unhedged stocks.

The seasonal factors indicate that, after taking account of the above-mentioned price spread effects, the net long position was relatively high in the fall and that it decreased as the year progressed through the spring months. Such behavior is consistent with the general expectation during the harvest season that soybean prices are more likely to rise than to fall as the year progresses. By late spring and summer, the net long position began increasing again, reaching a high in October.

### Qualification of the Regression Results

This is an exploratory study based on aggregated data for three firms. Although the patterns observed for the three as a group seem plausible, there were times when all firms did not behave in similar fashion. Futures market activities can be quite intricate.<sup>3</sup> Hedging and arbitraging behavior have many dimensions and can include other commodities, other markets, and other unspecified considerations. Also, the variables employed in the analysis might have been measured in other ways, and the implicit assumption of linear relationships may not always have been appropriate. The results of this study should, therefore, be considered tentative and suggestive of hypotheses for further testing.

<sup>3</sup>For further discussion see Henry B. Arthur, *Commodity Futures as a Business Management Tool*, Harvard Univ. Grad. Sch. Bus. Admin., Boston, 1971, and Thomas A. Hieronymus, *Economics of Futures Trading*, Commod. Res. Bur., New York, 1971.



Appendix table 1.—Short soybeans: Distribution of contract months according to share of open interest held by three large soybean processing firms on midmonth reporting dates, by year, month, delivery month, and months before contract maturity, October 1957-September 1966

Item	Range in percentage held by three processors					Total reported
	0-9	10-19	20-29	30-39	40-49	
<i>Number of individual contract months</i>						
<b>Marketing year (October-September):</b>						
1957-58 .....	6	5	3	1		15
1958-59 .....	6	3	6	9	2	26
1959-60 .....	10	9	10	6		35
1960-61 .....	14	6	11	5	2	38
1961-62 .....	11	9	8			28
1962-63 .....	6	7	13	2		28
1963-64 .....	7	17	7	1		32
1964-65 .....	11	9	7	4	1	32
1965-66 .....	13	12	3			28
<b>Total .....</b>	<b>84</b>	<b>77</b>	<b>68</b>	<b>28</b>	<b>5</b>	<b>262</b>
<b>Month:</b>						
October .....	8	13	3	3	1	28
November .....	10	8	7	5		30
December .....	7	10	4	4	3	28
January .....	3	11	6	2		22
February .....	3	7	13	1		24
March .....	2	3	11	2	1	19
April .....	5	5	4	5		19
May .....	5	3	7	2		17
June .....	10	5	5	1		21
July .....	9	6	3	1		19
August .....	7	2	1	1		11
September .....	15	4	4	1		24
<b>Total .....</b>	<b>84</b>	<b>77</b>	<b>68</b>	<b>28</b>	<b>5</b>	<b>262</b>
<b>Delivery month:</b>						
November .....	33	16	5	2		56
January .....	15	7	9	6	3	40
March .....	9	15	9	10	1	44
May .....	11	23	16	7		57
July .....	9	13	26	3	1	52
August <sup>a</sup> .....	1	3	3			7
September .....	6					6
<b>Total .....</b>	<b>84</b>	<b>77</b>	<b>68</b>	<b>28</b>	<b>5</b>	<b>262</b>
<b>Months before contract maturity:</b>						
0 .....	10	4	1	1		16
1 .....	9	12	10	9	2	42
2 .....	8	11	20	8		47
3 .....	7	14	13	4	2	40
4 .....	10	13	12	3	1	39
5 .....	14	10	7	1		32
6 .....	13	7	4	1		25
7 .....	7	5	1	1		14
8 .....	4	1				5
9 .....	2					2
<b>Total .....</b>	<b>84</b>	<b>77</b>	<b>68</b>	<b>28</b>	<b>5</b>	<b>262</b>

<sup>a</sup>The August futures contract for soybeans began with 1962 delivery.

Appendix table 2.—Long soybeans: Distribution of contract months according to share of open interest held by three large soybean processing firms on midmonth reporting dates, by year, month, delivery month, and months before contract maturity, October 1957-September 1966

Item	Range in percentage held by three processors				Total reported
	0-9	10-19	20-29	30-39	
<i>Number of individual contract month positions</i>					
Marketing year (October-September):					
1957-58 .....	12	3			15
1958-59 .....	18	2	1		21
1959-60 .....	10	2		1	13
1960-61 .....	11	2	1		14
1961-62 .....	22	3			25
1962-63 .....	6	4	3		13
1963-64 .....	13	8		1	22
1964-65 .....	14	5			19
1965-66 .....	15	8	1		24
Total .....	121	37	6	2	166
Month:					
October .....	14	4			18
November .....	12		1	1	14
December .....	13	3			16
January .....	8	5			13
February .....	10	3			13
March .....	7	2	1	1	11
April .....	9	3			12
May .....	9	2			11
June .....	11	3			14
July .....	9	4	1		14
August .....	7	1	2		10
September .....	12	7	1		20
Total .....	121	37	6	2	166
Delivery month:					
November .....	27	21	6	1	55
January .....	24	9			33
March .....	21	2		1	24
May .....	24	4			28
July .....	17				17
August <sup>a</sup> .....	4	1			5
September .....	4				4
Total .....	121	37	6	2	166
Months before contract maturity:					
0 .....	8	3	1	2	14
1 .....	24	5			29
2 .....	24	6	1		31
3 .....	14	4	2		20
4 .....	14	6	1		21
5 .....	13	5			18
6 .....	14	2			16
7 .....	8	2			10
8 .....	1	2	1		4
9 .....	1	2			3
Total .....	121	37	6	2	166

<sup>a</sup>The August futures contract for soybeans began with 1962 delivery.

Appendix table 3.—Short soybean meal: Distribution of contract months according to share of open interest held by three large soybean processing firms on midmonth reporting dates, by year, month, delivery month, and months away from contract maturity, October 1957-September 1966

	Range in percentage held by three processors									Total reported
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<i>Number of individual contract months</i>										
<i>Marketing year</i>										
<i>(October-September):</i>										
1957-58 .....		2	7	7	3	5	3	4		31
1958-59 .....	7	5	12	6	4	2	3			39
1959-60 .....	6	5	5	5						21
1960-61 .....	6	2	5	4	6	3	2	1	1	30
1961-62 .....	6	9	2	2	1					20
1962-63 .....	10	2	5	9	1					27
1963-64 .....	12	3	5	2	2	2	4	3		33
1964-65 .....	6	6	9	8	9	6	4	3	1	52
1965-66 .....	7	14	13	10	2	3	3	2	1	55
Total .....	60	48	63	53	28	21	19	13	3	308
<i>Month:</i>										
October .....	3	2	7	3	4	1	1			21
November .....	2	5	6	9	2	3	2	3		32
December .....	6	3	6	5	3	3	4	1	1	32
January .....	2	5	1	7	3	1	3	3		25
February .....	6	3	4	5	2	2	2	1	1	26
March .....	7	1	6	4	2		3	1		24
April .....	8	5	6	2	1	2		2	1	27
May .....	6	2	5	6	3		2	1		25
June .....	4	6	7	6	1	4				28
July .....	3	6	7	3	4	1	1			25
August .....	7	3	4	2	1	2	1			20
September .....	6	7	4	1	2	2		1		23
Total .....	60	48	63	53	28	21	19	13	3	308
<i>Delivery month:</i>										
October .....	3	3	8	6	5	4	2	2	1	34
December .....	9	7	7	7	6	2		1		39
January .....	6	6	7	10	4	1	2			36
March .....	9	8	10	6	3	2	5	3	1	47
May .....	2	9	8	11	1	5	8	4		48
July .....	17	8	11	7	4	3	1	1	1	53
August .....	10	4	11	5	3					33
September .....	4	3	1	1	2	4	1	2		18
Total .....	60	48	63	53	28	21	19	13	3	308
<i>Months before contract maturity:</i>										
0 .....	5	4	6	2	3					20
1 .....	4	10	9	13	4	8	2	4	1	55
2 .....	3	6	14	14	5	2	7	1		52
3 .....	13	5	10	7	4	6	4			49
4 .....	11	7	5	8	3	2	4	1		41
5 .....	9	5	9	1	3	2	1	1		31
6 .....	4	7	4	3				2	1	21
7 .....	7	1	5	2	2		1	1	1	20
8 .....	3	2		3	1	1		2		12
9 .....	1	1	1		1			1		5
10 .....					2					2
Total .....	60	48	63	53	28	21	19	13	3	308

Appendix table 4.—Long soybean meal: Distribution of contract months according to share of open interest held by three large soybean processing firms on midmonth reporting dates, by years, month, delivery month, and months before contract maturity, October 1957-September 1966

	Range in percentage held by three processors									Total reported
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
<i>Number of individual contract months</i>										
<b>Marketing year</b> (October-September):										
1957-58 .....	11	13	7	2						33
1958-59 .....	24	14	1	1						40
1959-60 .....	11	1	3	1						16
1960-61 .....	23	1								24
1961-62 .....	5	4	3	2						14
1962-63 .....	8	8	4	4	2	1				27
1963-64 .....	14	7	7	2	4		4	1		39
1964-65 .....	4	21	8	11	12	1	2	1	1	61
1965-66 .....	20	15	8	7	3	1				54
<b>Total .....</b>	<b>120</b>	<b>84</b>	<b>41</b>	<b>30</b>	<b>21</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>308</b>
<b>Month:</b>										
October .....	12	7	2		2				1	24
November .....	10	7	3	3	2					25
December .....	11	7	5	3	1		2			29
January .....	12	6	2	3		1	1	1		26
February .....	14	3	5	2	1					25
March .....	9	6	4	3	1		1			24
April .....	14	3	3	2	3	1				26
May .....	8	10	3	2	3	1				27
June .....	10	7	5	4	3					29
July .....	10	6	5	5			1			27
August .....	5	11	1	2	2			1		22
September .....	5	11	3	1	3		1			24
<b>Total .....</b>	<b>120</b>	<b>84</b>	<b>41</b>	<b>30</b>	<b>21</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>308</b>
<b>Delivery month:</b>										
October .....	14	8	2	5	4		3	1	1	38
December .....	10	13	5	2	3		1			34
January .....	6	6	7	8	7	2				36
March .....	28	12	3	1	1		1			46
May .....	21	11	9	2						43
July .....	21	18	9	5	1					54
August .....	11	8	4	7	4	1	1	1		37
September .....	9	8	2		1					20
<b>Total .....</b>	<b>120</b>	<b>84</b>	<b>41</b>	<b>30</b>	<b>21</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>308</b>
<b>Months before contract maturity:</b>										
0 .....	3	5	5	1	2	1	2		1	20
1 .....	20	10	7	4			1			42
2 .....	23	9	5	4	2			1		44
3 .....	23	13	5	2	3	1	1			48
4 .....	15	11	5	3	6					40
5 .....	16	7	5	4	2					34
6 .....	8	10	3	4	1					26
7 .....	8	11	2	3	1			1		26
8 .....	1	6	2	4	2		1			16
9 .....	2	2			1	1	1			7
10 .....	1		1	1	1					4
11 .....			1							1
<b>Total .....</b>	<b>120</b>	<b>84</b>	<b>41</b>	<b>30</b>	<b>21</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>308</b>

Appendix table 5.—Short soybean oil: Distribution of contract months according to share of open interest held by three large soybean processing firms on midmonth reporting dates, by year, month, delivery month, and months before contract maturity, October 1957-September 1966

Item	Range in percentage held by three processors							Total reported
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	
<i>Number of individual contract months</i>								
<b>Marketing year</b> (October-September):								
1957-58 .....	10	9	9	1				29
1958-59 .....	26	11	1	1		1		40
1959-60 .....	19	12	4	3	1			39
1960-61 .....	14	15	9	3	2			43
1961-62 .....	1	7	12	5	4	3		32
1962-63 .....	4	10	5	4	6	1	1	31
1963-64 .....	8	6	9	4	3	7	4	41
1964-65 .....	8	14	15	9	2	7		55
1965-66 .....	12	14	10	9	8	3	4	60
<b>Total .....</b>	<b>102</b>	<b>98</b>	<b>74</b>	<b>39</b>	<b>26</b>	<b>22</b>	<b>9</b>	<b>370</b>
<b>Month:</b>								
October .....	10	12	7	3		1		33
November .....	9	6	10	7		1		33
December .....	9	7	10	9	1	1		37
January .....	8	6	6	2	5	1	1	29
February .....	7	7	9	2	1	4		30
March .....	8	7	5	1	1	3	1	26
April .....	6	11	2	1	1	3	2	26
May .....	6	6	4	1	3	2	2	24
June .....	5	10	2	2	5	2		26
July .....	12	4	9	7	4	2	1	39
August .....	13	12	1	3	3	1	2	35
September .....	9	10	9	1	2	1		32
<b>Total .....</b>	<b>102</b>	<b>98</b>	<b>74</b>	<b>39</b>	<b>26</b>	<b>22</b>	<b>9</b>	<b>370</b>
<b>Delivery month:</b>								
October .....	9	9	7	5	2	6	5	43
December .....	16	19	5	3				43
January .....	9	8	16	9	3	1		46
March .....	13	11	14	5	5	1	1	50
May .....	21	18	18	3	1	4		65
July .....	16	19	7	7	7	3	2	61
August .....	7	2	2	2	6	1	1	21
September .....	11	12	5	5	2	6		41
<b>Total .....</b>	<b>102</b>	<b>98</b>	<b>74</b>	<b>39</b>	<b>26</b>	<b>22</b>	<b>9</b>	<b>370</b>
<b>Months before contract maturity:</b>								
0 .....	4	8	5	3	6	2	1	29
1 .....	10	21	13	7	8	5		64
2 .....	7	17	15	9	7	3	3	61
3 .....	10	23	11	5	3	3	2	57
4 .....	17	11	11	5	1	3		48
5 .....	16	8	10	5		1	1	41
6 .....	17	5	5	1	1	1	1	31
7 .....	11	3	3	2		1	1	21
8 .....	7	2	1			2		12
9 .....	3			1		1		5
10 .....				1				1
<b>Total .....</b>	<b>102</b>	<b>98</b>	<b>74</b>	<b>39</b>	<b>26</b>	<b>22</b>	<b>9</b>	<b>370</b>

Appendix table 6.—Long soybean oil: Distribution of contract months according to share of open interest held by three large soybean processing firms on midmonth reporting dates, by year, month, delivery month, and months before contract maturity, October 1957-September 1966

Item	Range in percentage held by three processors					Total reported
	0-9	10-19	20-29	30-39	40-49	
<i>Number of individual contract months</i>						
<b>Marketing year (October-September):</b>						
1957-58 .....	12	7	7	3		29
1958-59 .....	25	16	6	1		48
1959-60 .....	25	5	2	1		33
1960-61 .....	25	12	2			39
1961-62 .....	16	3	1			20
1962-63 .....	10	1				11
1963-64 .....	23	15	2		1	41
1964-65 .....	31	16	5	2	1	55
1965-66 .....	46	6		2		54
<b>Total .....</b>	<b>213</b>	<b>81</b>	<b>25</b>	<b>9</b>	<b>2</b>	<b>330</b>
<b>Month:</b>						
October .....	22	5	5	1	1	34
November .....	23	5	1			29
December .....	27	2	2			31
January .....	21	2				23
February .....	20	5	1	1	1	28
March .....	12	8	1	2		23
April .....	15	7	2			24
May .....	11	7	2	1		21
June .....	12	7	1	1		21
July .....	19	9	3			31
August .....	17	14	1			32
September .....	14	10	6	3		33
<b>Total .....</b>	<b>213</b>	<b>81</b>	<b>25</b>	<b>9</b>	<b>2</b>	<b>330</b>
<b>Delivery month:</b>						
October .....	20	16	9	4	1	50
December .....	25	12	4			41
January .....	25	7	3			35
March .....	31	10	1			42
May .....	44	9	2	1		56
July .....	37	11	2			50
August .....	5	5	3	4	1	18
September .....	26	11	1			38
<b>Total .....</b>	<b>213</b>	<b>81</b>	<b>25</b>	<b>9</b>	<b>2</b>	<b>330</b>
<b>Months before contract maturity:</b>						
0 .....	8	3	5	1	1	18
1 .....	26	10	4	2		42
2 .....	20	16	3			47
3 .....	35	13	4	1		53
4 .....	28	15	2	1		46
5 .....	33	8	2	2		45
6 .....	24	7	1	1	1	34
7 .....	19	2	2			23
8 .....	7	5	2	1		15
9 .....	4	2				6
10 .....	1					1
<b>Total .....</b>	<b>213</b>	<b>81</b>	<b>25</b>	<b>9</b>	<b>2</b>	<b>330</b>

## Summary and Conclusions

This exploratory study of the use of soybean futures markets by three large processing firms brought out two types of findings. In the first place, it showed that large processor holdings are relatively important in individual futures contracts for soybeans, soybean meal, and soybean oil. The soybean meal market was the most highly concentrated, where the three firms accounted for 50 percent or more of the short open interest in nearly one-fifth of the contract months in which a short open interest was reported by the three firms. The percentages ran somewhat lower in individual futures contracts for soybean oil and substantially lower in contracts for soybeans. Higher levels of concentration appeared more frequently in contracts 1 to 3 months before contract termination

than either in more distant months or in the month of contract termination. It is not known whether the higher levels of concentration found were great enough to interfere with effectively competitive market functioning in those instances.

The second part of the study focused principally on statistical relationships between various price differentials and net long positions of the three firms. The results indicated generally that net long, or speculative, positions tended to increase as changes in selected price relationships increased prospects for price gains on the unhedged positions.

The findings of this study suggest hypotheses for further research which could lead to better understanding of the behavior of various types of participants in cash and futures commodity markets and perhaps eventually to improvements in the markets themselves.