

THE CASH WHEAT PREMIUM OVER THE CURRENT ACTIVE FUTURE

by

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## INTRODUCTION

The reduction of the costs of production, including marketing costs is practically the only farm relief measure that has functioned to the satisfaction of the farmer. Of the several things contributing to this, protection or insurance against price decline for the handler of farm products, as they pass through the regular market channels, is of no small importance.

This protection can partially be brought about by a systematic flow to market, stabilized prices, and by spreading the risks, by the method commonly referred to as hedging. It is generally agreed that the primary economic function of future trading consists in the hedging facilities which it affords. "There can be no doubt of the beneficial effect of hedging in reducing the cost of marketing those commodities which are traded in for future delivery." (9).

Hedging practice is carried on consistently by large terminal elevators and mills, especially in the northwest. It is estimated that probably 50 per cent of the country elevators hedge their grain or at least a part of it. (8). W. J. Kuhrt of the Bureau of Agricultural Economics in a paper read before the School of Cooperative Marketing at

the Kansas State Agricultural College March 14, 1929, stated that 46 per cent of the cooperative elevators of the United States hedge their grain. In the same school, J. J. Knight, General Manager of the Equity Union Grain Company, Kansas City, Missouri, urged the study of spreads as a means for greater profits for the country elevator.

Hedging transactions of the country elevators are most commonly carried on in the current active future. For their most satisfactory operation, they assume nearly a parallel movement of cash and the nearest future prices. If the cash and future spread fluctuates to any extent, it may wipe out any protection which the hedger is seeking and turn it into a loss. It should be recalled that the cash and future prices are bound to come together by the close of the delivery month, so that when there is a wide spread between cash and future prices, the dealer must exercise great caution in placing hedges. "Discounts tend to inflict loss on the selling hedger. As regards the buying hedger, the discount on the futures as compared with the cash is an advantage rather than a disadvantage, but buying hedges are much smaller in volume than selling hedges." (1, c). Therefore, when the future is above the cash, the closing of the spread in the delivery month, or in fact at any

time, will pay for the hedge and reduce the risk to the hedger. On the other hand, when the future is below the cash, such closing of the spread defeats the very purpose of the transaction. In order to be a "perfect hedge" the future should be above the cash at least equal to carrying charges. The following studies show that a "perfect hedge" in the current active future is more of an exception than a regular possibility.

Anything, then, which interferes with the security of the hedge, narrows the margin of the middleman and thus lowers the price paid to the producer. Furthermore at present, cash wheat prices on the boards of trade are always quoted at so much premium over or discount under the current active future. To have some idea of when and how much this premium or discount might change, it is necessary to understand some of the major factors affecting the spread between cash and future prices.

This study was made for the purpose of gaining more information as to the basis for changes in cash wheat premiums from time to time and especially those factors affecting seasonal fluctuations in the cash-future spread.

#### DEFINITIONS OF TERMS USED

The term hedging as used in this study refers to the practice of buying or selling the future contracts to off-

set an opposite transaction in the cash grain. To protect a purchase of cash grain against decline in price, a like quantity of future wheat would be purchased. This would be termed a buying hedge, and a hedge in which the future is sold would be known as a selling hedge.

A future is a contract to deliver or receive a certain number of bushels at some future time. There are four futures quoted at different seasons on the Kansas City market, which are as follows: July, September, December, and May. Any futures quoted at a given time are said to be active, and the future which matures nearest in the future is known as the current active future.

Spread is the term used to designate the difference in cents between the future and cash prices. A negative spread indicates a future price lower than cash, and a positive spread is one in which the future is above the cash.

The crop year extends from July 1 to June 30.

#### TYPE OF DATA USED

The data used are limited to Kansas City prices of the low current active future for the day, in relation to the low cash No. 2 hard winter wheat. (2). The spreads referred to are obtained by subtracting the cash from the future price for each day of the period studied. Positive spreads, then, will refer to a relationship in



which the future is above the cash or cash discounts, while negative spreads refer to a future which is below the cash, or to cash premiums. The study begins with the crop year 1910-11 and is extended to include 1927-28. The years 1917-18 and 1918-19 are omitted, as the grain exchanges were closed due to war conditions. The monthly average spreads, which were used in most comparisons, were obtained by a summation of the negative spreads, and subtracting from the result, the sum of the positive spreads, if any, and dividing by the number of market days in the month. In order to verify this average, the median and mode for each month were also calculated. It is shown on Figure 1 that in general, the trends are the same in each. It was considered that this similarity justified the use of the average in the studies which follow.

#### GENERAL CHARACTERISTICS

Attention is called to the fact that the averages of the monthly averages, medians and modes are all negative spreads. In the 15 years studied, the Kansas City futures market was quoted 4,333 days. During this time, the current active futures were above the cash only 350 days, or 8 per cent of the time, while they were below the cash 3,983 days or 92 per cent of the time. Table I shows the





Figure 1. — Monthly average, median, and mode of the negative cash-future spread. (1910-1927)

Table I. — Number of days in which the future is above the cash price by months from 1910-11 to 1927-28 inclusive.

|         | J  | A  | S  | O  | N | D | J   | F  | M  | A | M | J |     |
|---------|----|----|----|----|---|---|-----|----|----|---|---|---|-----|
| 1910-11 | 0  | 6  | 0  | 4  | 0 | 2 | 25  | 16 | 0  | 0 | 0 | 0 | 53  |
| 1911-12 | 8  | 10 | 0  | 0  | 0 | 0 | 1   | 2  | 0  | 1 | 0 | 0 | 22  |
| 1912-13 | 0  | 5  | 21 | 2  | 0 | 0 | 21  | 22 | 7  | 0 | 0 | 0 | 78  |
| 1913-14 | 2  | 0  | 1  | 0  | 0 | 0 | 26  | 21 | 6  | 0 | 0 | 0 | 56  |
| 1914-15 | 1  | 6  | 1  | 24 | 4 | 1 | 3   | 0  | 0  | 0 | 1 | 0 | 41  |
| 1915-16 | 0  | 0  | 0  | 0  | 0 | 4 | 22  | 0  | 0  | 0 | 0 | 0 | 26  |
| 1916-17 | 1  | 0  | 0  | 0  | 0 | 0 | 0   | 0  | 0  | 0 | 0 | 0 | 1   |
| 1920-21 | 0  | 0  | 0  | 0  | 0 | 1 | 0   | 0  | 0  | 0 | 0 | 0 | 1   |
| 1921-22 | 2  | 6  | 0  | 0  | 0 | 0 | 0   | 2  | 0  | 0 | 0 | 0 | 10  |
| 1922-23 | 0  | 0  | 0  | 0  | 0 | 0 | 0   | 0  | 0  | 0 | 0 | 0 | 0   |
| 1923-24 | 0  | 1  | 0  | 0  | 0 | 0 | 0   | 0  | 0  | 0 | 0 | 0 | 1   |
| 1924-25 | 3  | 13 | 10 | 23 | 5 | 1 | 3   | 0  | 0  | 0 | 1 | 0 | 59  |
| 1925-26 | 0  | 0  | 0  | 0  | 0 | 0 | 0   | 0  | 0  | 0 | 0 | 0 | 0   |
| 1926-27 | 0  | 2  | 0  | 0  | 0 | 0 | 0   | 0  | 0  | 0 | 0 | 0 | 2   |
| 1927-28 | 0  | 0  | 0  | 0  | 0 | 0 | 0   | 0  | 0  | 0 | 0 | 0 | 0   |
| Total   | 17 | 49 | 33 | 53 | 9 | 9 | 101 | 63 | 13 | 1 | 2 | 0 | 350 |

distribution of the days in which the future was above the cash by months and years. The majority of these instances are grouped in January and February of the early years of the group. The year 1924-25 seems to stand out as an exception in the post-war group. It is readily seen that conditions for a "perfect hedge" in the current active future occur only at rare intervals in recent years. Because of their predominance, the following relationships deal almost entirely with negative spreads. This condition will also be referred to as cash premium.

#### RELATION OF NEGATIVE SPREAD TO CASH PRICES

The relationship of negative spreads to price trends was studied from two angles, the results of which show great similarity and at the same time some vital differences. The data used were the averages of the high monthly cash prices and the averages of the highest monthly negative spreads.

A comparison of these averages is shown in Figure 2. This seems to show a positive relationship between cash price and negative spread for the first six months of the crop year and a negative relationship the last six months of the year. In a general way, the value of the spread follows the upward trend of prices in the last half of the year, but the movements from month to month are mostly in-



Figure 2. — Monthly averages of high prices and high negative spreads for the month

verse.

In the first half of the year, cash wheat in August declines faster than the future tending to narrow the negative spread. The last half of the year the cash wheat advances the faster, tending to widen the spread and at the end of the season declines less rapidly than the future, making for the widest spread of the year in June. The first half of the year is dominated by large immediate cash supplies and anticipated shorter future supplies while the second half of the year is dominated by smaller nearby cash supplies and larger anticipated future supplies from a new crop.

A second study was made on the basis of the number of times any month is above the preceding month. This is a form of comparison which compares each month with the preceding one. It is of value, in that it puts the comparison on a frequency basis. It gives an idea of the risks of an increase or decrease for the following month. Any unusual condition in one or two years cannot then obliterate several average years. In Figure 3 these results are plotted in the form of curves. In July, in the 15-year period, the high monthly cash price was over the June price only four times out of the 15 years, while the high negative spread for the month was over that of June only two times. These chances increase together until November is reached. From



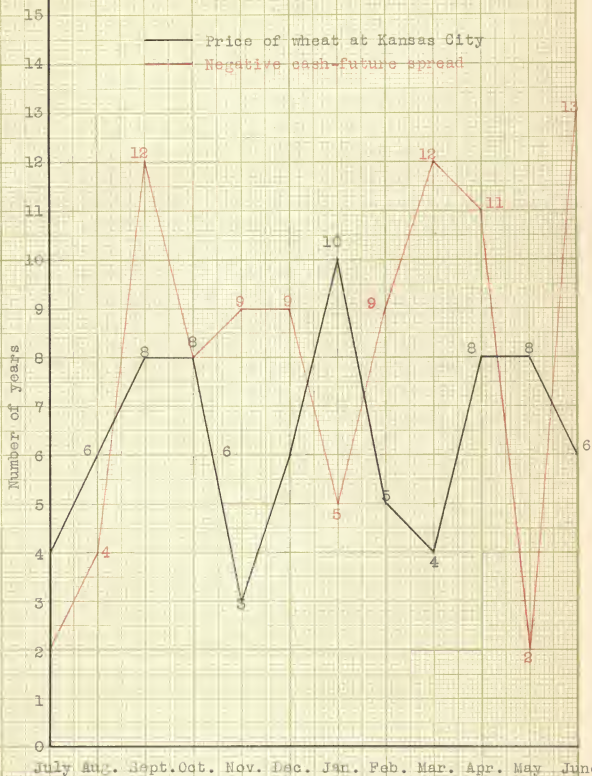


Figure 3. —Number of times monthly high price and spread are above preceding month.

then on to the end of the year a very regular inverse relationship is shown. This means that from November to the end of the crop year, as the chances of a price increase over the preceding month increase, the chances of an increased spread become less. Because it is on a frequency basis, this comparison more nearly represents actual conditions. In averages, a few large variations may offset many small fluctuations.

During the months in which the Kansas City market is dominated by our domestic crop and mill and export buying in the United States is at its height, there appears to be a positive relationship between cash price and spread. After October and November when foreign countries begin to set the level of prices, the spread shows a strong inverse relationship to price.

In terms of cash premiums over the current active future, these relations have the following meanings. Cash wheat premiums most frequently increase as prices advance from July to September and during this season most frequently advance in September. From October to December when prices most frequently tend to decline, cash wheat premiums show a less tendency to decline. This means, cash wheat responds less to weakening influences in November than does the December future. In January, when prices



most frequently show some advance, cash premiums less frequently advance. This means then, January cash wheat responds less readily to the strengthening influences than does the May future, because the May future must take into account both old crop supplies and prospects for replacement supplies from the growing crop. In March when prices seldom advance over February, cash premiums frequently show an advance. Again, cash wheat responds less readily to the bearish influence of Argentine and Australian new crop supplies, than does the May future. The cash price in April and May is steady to strong compared to March. This is mainly due to decreasing supplies from Argentina and Australia, and also to greater spring mill buying. In spite of this rise the future rises enough to reduce the premium considerably. This is due mainly to the effect of closing out May contracts. In June both cash wheat and future prices fall but the future prices are more sensitive, resulting in the largest spread of the year.

This inverse relationship on a frequency basis proves that the simultaneous rise in the last half of the year, of the average prices and spreads, is caused by relatively few large fluctuations in the spread rather than any consistent seasonal rises. It is also evident that the adjustment to the new crop basis from June to July disrupts the spread and price relation. To illustrate, it will be

noticed on Figure 2 that at the same time that cash wheat is falling from an average of \$1.53 in May to \$1.48 in June, the future has widened the negative spread on the average from 7.4 cents to 17.3 cents. This shows the comparative reactions to new crop conditions. The price of the future is discounted in June by the expectation of abundant future supplies on the July option, while available cash supplies of old wheat are scarce and the visible supply is low. In July, the future price has reached its new year adjustment and remains somewhat steady, while the cash falls rapidly to make its adjustment to new crop supplies. There are great possibilities in a more intensive study of this new crop adjustment for the purpose of determining the character of the seasonal prices; that is, whether to expect seasonal uptrend or downtrend in prices. It is well known that it is not profitable to store and hold wheat every year and with the present available information it is impossible to determine the type of year we are in, until after the wheat is either stored or sold. All the information available to the wheat trading world is reflected in the cash and future prices, so the key to this important situation is certainly to be found in the cash-future relationships, if anywhere. Time did not permit a study of this phase, but 1928-29 is submitted as an example. The average negative spread for July was 1.8 cents which is

less than one-half of the average spread of 4.5 cents for July since 1910. We find that 1928-29 is an exceptional wheat market year in that the future has been above the cash more than normal, the visible supply is the largest on record and the seasonal price trend is downward. This is only mentioned to suggest the possibility of an early cash-future relationship which would throw some light on the movement of the price later in the season.

A study of the uptrend and downtrend months from 1922-23 to 1926-27 inclusive, shows an average negative spread of 4.8 cents for 20 months of price decline and 3.9 cents average negative spread for 19 uptrend months. The sample is small in this case, but the results are in line with previous conclusions, that as prices rise the negative spread has a tendency to become less.

#### PRE-WAR AND POST-WAR SPREADS

A distinct change seems to have taken place in the size of the negative spread since pre-war time.

In order to eliminate the direct influence of war years, six years from 1910-11 to 1915-16 and the six years from 1921-22 to 1926-27 were chosen for comparison. Figure 4 shows the average negative spread by months for the two groups of years. There is a distinctly greater average spread in the post-war group in all months except July

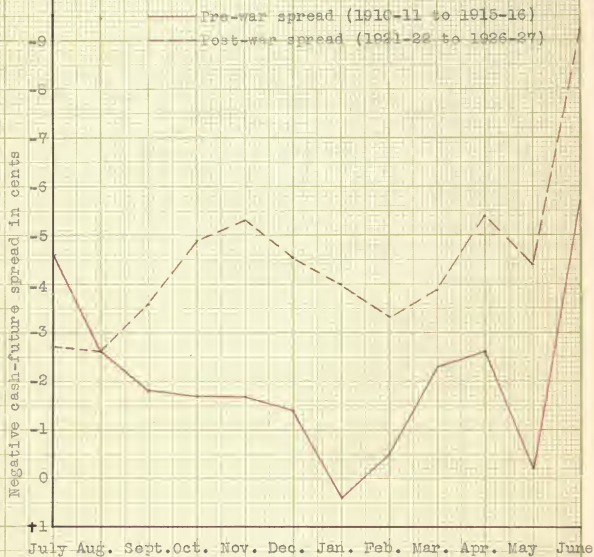


Figure 4. — Monthly average pre-war and post-war spreads.

and August. Table II shows the total average of the pre-war group to be 2.5 cents and of the post-war years 4.4 cents or nearly twice as much for the post-war years. In addition to the change in the level of the spread, certain seasonal changes have taken place. Most noticeable of these are July and February. The July post-war spread is much smaller than the pre-war spread and in post-war years the winter low point in the negative spread is reached in February five times in the six years, while in the pre-war group, it was reached in January four times out of the six years.

In order to verify the results shown by the average and to establish the fact of a general trend, a correlation chart is shown in Figure 5. The monthly average future-cash spreads were plotted against the successive years from 1910 to 1928. The line of best fit shows conclusively that, as time has progressed since 1910, that the negative spread has increased.

A further analysis of the trend is presented in Table III. In the 12 years studied in this connection, there were 33 months in which the average spread was more than 5 cents. Of these, 26 were in post-war years and only seven in pre-war years. Of the 12 months in which the average spread was positive, 10 are in the pre-war period. Also there were no positive average spreads of

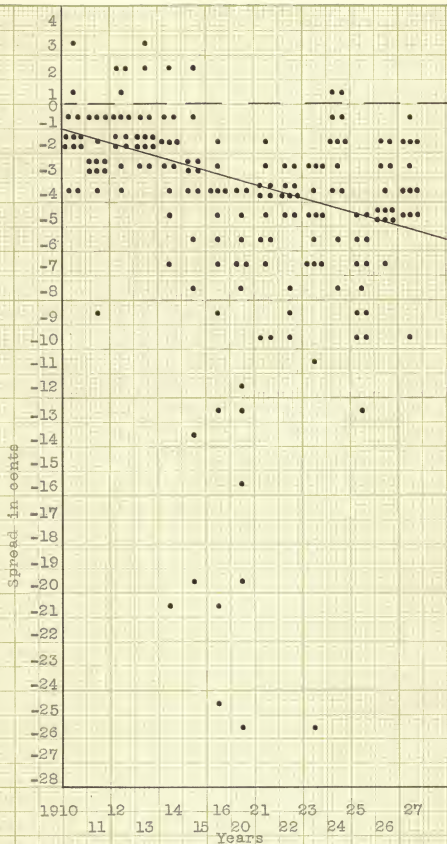


Figure 5. — Distribution of monthly average cash-future spread.



Table II. — Average monthly negative spread of  
six pre-war and six post-war years.

|           | Pre-war years<br>1910-16 | Post-war years<br>1921-26 |
|-----------|--------------------------|---------------------------|
| July      | 4.6                      | 2.7                       |
| August    | 2.6                      | 2.6                       |
| September | 1.8                      | 3.6                       |
| October   | 1.7                      | 4.9                       |
| November  | 1.7                      | 5.2                       |
| December  | 1.4                      | 4.4                       |
| January   | .4                       | 4.0                       |
| February  | .5                       | 3.3                       |
| March     | 2.3                      | 3.9                       |
| April     | 2.6                      | 5.4                       |
| May       | .2                       | 4.4                       |
| June      | 5.7                      | 9.2                       |
| Average   | 2.5                      | 4.4                       |

Table III. — Analysis of pre-war and post-war  
spreads.

|                       | Negative<br>spreads of<br>5¢ or more | Positive<br>spreads | Positive<br>spreads<br>more than<br>1¢ | Negative<br>spread less<br>than 1¢ |
|-----------------------|--------------------------------------|---------------------|--|------------------------------------|
| <u>Pre-war years</u>  |                                      |                     |  |                                    |
| 1910-11               | 0                                    | 2                   | 1                                      | 2                                  |
| 1911-12               | 1                                    | 0                   | 0                                      | 3                                  |
| 1912-13               | 0                                    | 3                   | 2                                      | 3                                  |
| 1913-14               | 0                                    | 3                   | 3                                      | 2                                  |
| 1914-15               | 2                                    | 1                   | 1                                      | 2                                  |
| 1915-16               | 4                                    | 1                   | 1                                      | 1                                  |
| Total                 | 7                                    | 10                  | 8                                      | 13                                 |
| <u>Post-war years</u> |                                      |                     |  |                                    |
| 1921-22               | 3                                    | 0                   | 0                                      | 0                                  |
| 1922-23               | 2                                    | 0                   | 0                                      | 0                                  |
| 1923-24               | 3                                    | 0                   | 0                                      | 0                                  |
| 1924-25               | 2                                    | 2                   | 0                                      | 2                                  |
| 1925-26               | 10                                   | 0                   | 0                                      | 0                                  |
| 1926-27               | 1                                    | 0                   | 0                                      | 0                                  |
| Total                 | 26                                   | 2                   | 0                                      | 2                                  |



more than 1 cent in the six post-war years and eight such months in the pre-war group. Consideration of the foregoing data would warrant the conclusion that to date there is rather a persistent tendency toward larger negative spreads in post-war years than existed in pre-war years.

Due to the great variety of changes which have come about as the direct or indirect results of the war, probably no one factor has played a very important part in causing this trend.

Volume of speculation is suggested as one cause of variation in the size of the cash-future spread. The distribution of the average monthly cash future spreads are shown in Figure 6, plotted against the volume of speculation for those months at Chicago. This chart shows to a very limited extent that the negative spread decreases with an increase in volume of speculation.

Volume of trading statistics are not available previous to 1921, so that comparisons to pre-war years cannot be made. It is reasonable to suppose that federal regulation of future trading and an increased interest in the stock market may have diverted funds from the grain futures market during much of the post-war period.

Supporting this theory is the rapid increase in the production of Canadian wheat and the increase in hedging both in Canada and northwest United States. This probably

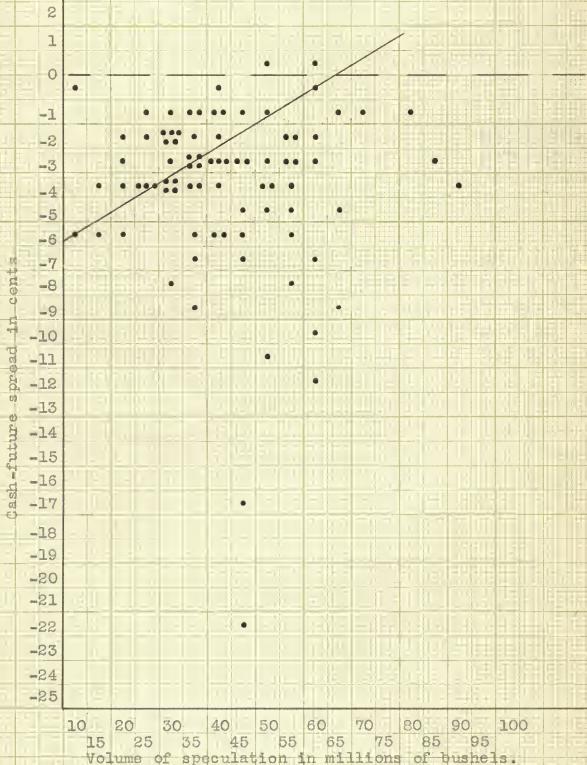


Figure 6. — Distribution of monthly average spreads in relation to volume of speculation, 1921-1927.

has increased the proportion of hedging to profit taking transactions. As hedging sales are not made primarily for profit, nor in such large quantities at one time, as profit taking transactions, they may not have the same effect on the spread.

In 1924 we have an individual instance which supports this line of reasoning. The following quotation is from the report of the Secretary of Agriculture in the United States Department of Agriculture Yearbook for 1924, page 61: "When the grain futures act went into effect in April, 1923, a general downward movement had been under way for fully two years, both in prices of wheat futures and in volume of trading therein. The downward price movement stopped in July, 1923, but the generally downward tendency of the volume continued through December. At the end of 1923, however, according to best estimates, the wheat futures markets were carrying more than twice as many hedges as at the end of 1922." Although records are not available, it is probable that the large volume of hedges carried into the following year 1924. In that year we find the largest volume of futures trading since records have been made available and it has the smallest yearly average negative spread of any post-war year. As shown in Table III, 1924-25 is the only post-war year in which there appears an average monthly positive spread and also the only post-war year

in which appears a monthly average negative of less than 1 cent.

#### VISIBLE SUPPLY AND NEGATIVE SPREAD

The visible supply of wheat seems to be one of the factors setting the general level of the spread, especially in recent years.

The analysis shows parallel and inverse movements between year to year changes in the average monthly visible supplies and the average negative spread for each month. All instances in which there were no changes in the monthly visible or spread from year to year were discarded. The results show 105 inverse movements or instances when the visible supply increased or decreased in comparison with the same month of the previous year and at the same time the spread reacted in an opposite direction. In contrast with this inverse relationship between visible supply and cash future spreads there are only 53 parallel or like movements. The distribution of these is shown in Table IV. It will be noticed that the inverse movements are especially in evidence in recent years.

A like study of month to month correlation movements rather than year to year, showed practically no relationship, the inverse movements and parallel movements being about equal in number. This tends to show that in all pro-

Table IV. — Year to year correlation movements between the visible supply and the cash-future spread.

|         | J  | A | S  | O  | N  | D | J | F | M | A | M | J | Minus | Plus |
|---------|----|---|----|----|----|---|---|---|---|---|---|---|-------|------|
| 1910-11 |    |   |    |    |    |   |   |   |   |   |   |   |       |      |
| 1911-12 | -  | o | -  | x  | x  | x | x | x | x | - | x | x | 3     | 8    |
| 1912-13 | -  | x | x  | x  | x  | x | x | - | - | - | - | - | 6     | 6    |
| 1913-14 | -  | x | x  | x  | -  | - | x | - | x | - | x | x | 5     | 7    |
| 1914-15 | -  | - | o  | -  | -  | - | x | x | - | - | - | - | 9     | 2    |
| 1915-16 | -  | - | -  | -  | -  | x | x | x | - | x | x | - | 7     | 5    |
| 1916-17 | -  | - | -  | -  | -  | x | - | - | - | - | - | - | 11    | 1    |
| 1920-21 | x  | - | -  | -  | -  | - | x | x | x | x | x | x | 5     | 7    |
| 1921-22 | x  | - | -  | -  | -  | - | - | - | - | - | - | - | 11    | 1    |
| 1922-23 | o  | - | -  | -  | -  | x | x | x | - | - | - | - | 8     | 3    |
| 1923-24 | -  | - | -  | -  | -  | x | x | x | x | x | x | x | 5     | 7    |
| 1924-25 | -  | - | -  | -  | -  | - | - | - | x | x | x | - | 9     | 3    |
| 1925-26 | -  | - | -  | -  | -  | - | - | - | - | - | - | - | 12    | 0    |
| 1926-27 | x  | o | -  | -  | -  | - | - | - | - | - | - | - | 10    | 1    |
| 1927-28 | -  | x | -  | -  | -  | x |   |   |   |   |   |   |       |      |
| Minus   | 10 | 9 | 11 | 11 | 12 | 7 | 5 | 7 | 8 | 9 | 7 | 9 | 105   |      |
| Plus    | 3  | 3 | 2  | 3  | 2  | 7 | 8 | 6 | 5 | 4 | 6 | 4 |       | 53   |

o No change instances  
 x Plus or positive movements  
 - Minus or negative movements

bability the visible supply has a greater effect in setting the yearly level than in influencing the seasonal fluctuations of cash-future spreads.

An inverse relation is also shown in Figure 7, in which the cash-future spread is plotted against the monthly visible supply. As the visible supply increases, there are fewer large negative spreads and a greater tendency for them to be grouped close to the cash or even turning into positive spreads.

A study of averages in Figure 8 upholds the previous evidence of an inverse relationship. Starting with July, the negative spread is large and the visible supply is small. As the visible piles up, the average negative spread decreases, until the highest visible is reached in January, at which time the smallest spread is reached.

#### THE 1928-29 SPREAD AND VISIBLE SUPPLY

The current year of 1928-29 has experienced a world's surplus of wheat. Practically every wheat producing country of the world has raised a large crop, which has greatly restricted our exports. This has resulted in the largest visible supply on record. The comparison of the monthly visible supply from July to March of the year 1928-29 is shown in Figure 9 (a). The difference between the current visible and the 1910-27 average is outstanding. As the



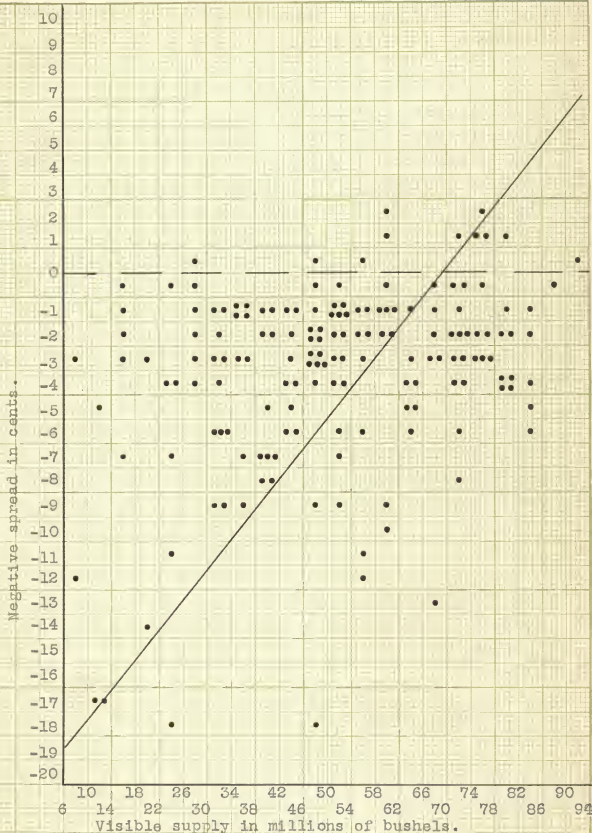


Figure 7. — Distribution of monthly average spreads in relation to visible supply of wheat.



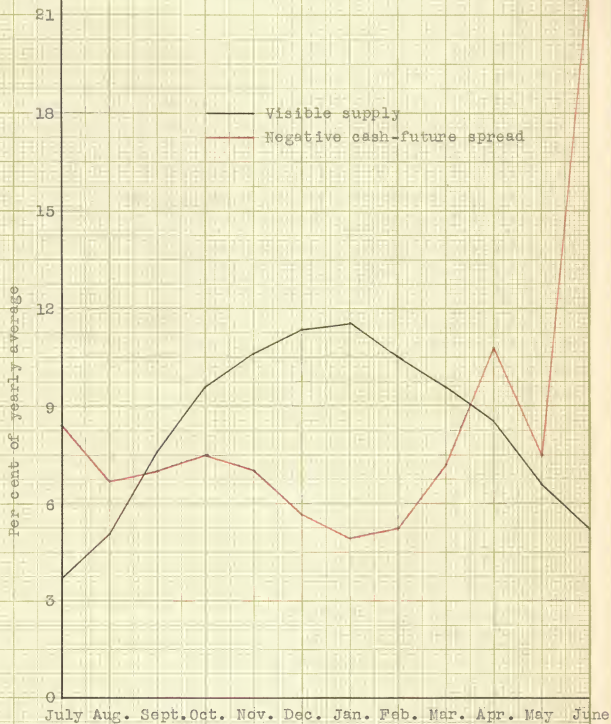
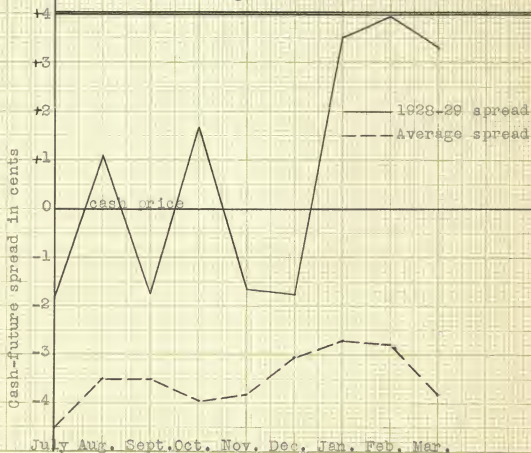
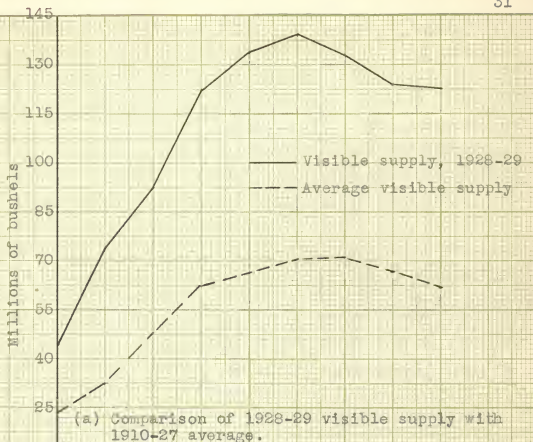


Figure 8. — Seasonal variations expressed as an index based on yearly average (1910-1927)



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Figure 9. — Comparison of 1928-29 conditions with 1910-27 average.

visible supply figures show scarcely any secular trend upward, the year 1928-29 is a very unusual one from the standpoint of size of visible supplies.

To show the unusual situation which is also to be found in the cash-future spread, Figure 9 (b) is shown. The cash has been plotted as a straight line and the space above the line represents the positive spreads and below, the negative spreads. At no time during this crop year has the negative spread been as great as the average. In five out of the nine months it has even averaged a positive spread. In February the spread reached 6.7 cents above the average. While only one year is considered, yet it strongly supports the other evidence, namely, that under heavy visible supply the future tends to close up the negative spread or even go into a positive spread.

"It is said that the futures market is likely to be satisfactory for hedging purposes when there is a large stock of grain at the terminal market and in storage."  
(1, c).

#### KANSAS CITY RECEIPTS AND NEGATIVE SPREAD

Receipts at the central market seem to be a strong factor influencing the seasonal movement of the cash-future spread. The study was made on a frequency basis. A com-

parison was made of the number of times any month is over the preceding month in the 14 years for receipts and monthly average spreads. These are plotted in Figure 10 in the form of curves. A study of these curves, shows that they move opposite to each other with almost perfect regularity. Starting with July, we find the receipts to be over those of June, 14 times out of the 14 years, while the spread has been over that of June only two out of the 14 years. As the chances of increased receipts diminish, the chances of increased spreads increase. This marked inverse relationship follows through for nine out of the 12 months. In two of the exceptions one curve remains horizontal and in only one month, from October to November, do the curves assume a parallel position. This is approximately the same period in which the median and the average spread showed the greatest differences. It is the period in which prices are largely determined by foreign demand and the Kansas City receipts lose control of the situation. While this curve does not give any idea as to the seasonal level of the spread, it would be of value in predicting its direction from month to month throughout the season.

#### SUMMARY

(1) The general tendency of the average cash premium in the first six months of the year is downward. There is

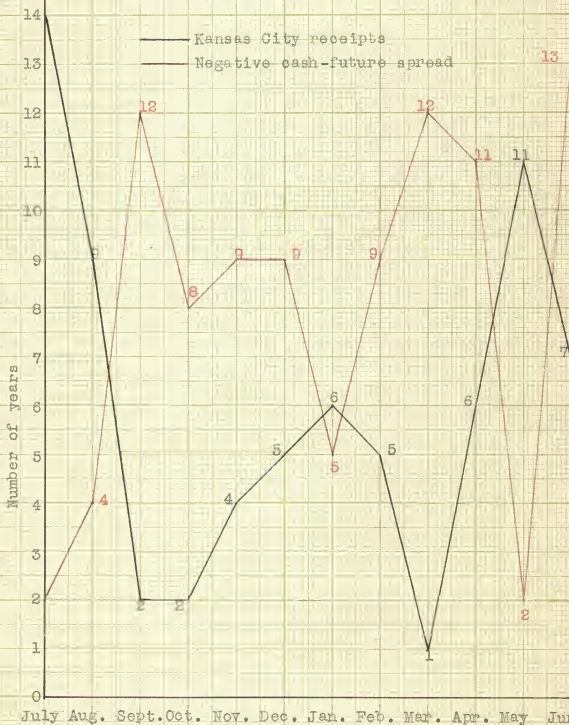


Figure 10. — Number of times that receipts and negative spread of any month are above preceding month in 14 years.



a sharp decline from July to August, then a slight rise through September, reaching a fall peak in September. Through November, December, and January the premium becomes smaller. It then increases to April, falls in May, and increases abruptly to the highest point of the year in June.

(2) There were only 350 days in the 4,333 market days studied since 1910-11, in which the cash was not above the nearest future. Approximately two-thirds of these occur in the first six years of the period. The years 1924-25 and 1928-29 were the only recent years which show many cash discounts.

(3) The seasonal trends of the average cash price and the average cash premiums are similar, but the month to month changes in the first half of the year follow each other more closely than in the second half. Month to month changes in the second six months show some tendency toward an inverse relationship.

(4) When the cash premium and the cash price are compared on a frequency basis, of the number of times in the 15 years that each is greater than the previous month, the same positive relationship is shown through October and a negative relationship from October to the end of the year.

(5) Cash premiums in post-war years average greater than pre-war years in all months except July and August.

(6) During the period from 1910 to 1928 there are more

cash discounts and fewer large premiums in the first half of the period and fewer discounts and more large premiums in the last half of the period.

(7) There is some tendency for the volume of speculation to correlate negatively with the cash premium.

(8) Visible supply and cash premiums show inverse relationships approximately two-thirds of the time. There have been practically no cash discounts under conditions of low visible supply.

(9) The curves of average visible supply and average cash premium move in opposite directions as is shown by the fact that June and July which are the months of lowest visible supply show the highest average spread. The visible supply reaches its peak in January, and at the same time the cash premium is at its minimum point.

(10) On the basis of the number of times each is greater than the previous month, the terminal receipts and cash premiums show an almost perfect negative relationship.

#### CONCLUSIONS

(1) Cash wheat premiums on the average tend to be higher the last half of the year than the first half, because of less pressure from cash supplies most years during the latter half of the season.

(2) Cash wheat premiums most frequently advance from



July to September because of small July visible supplies as a rule and heavy mill and export buying at that season. Also, it is about September that supplies of wheat moving into export trade from competing countries are smallest of the year. Futures advance less rapidly because of a known seasonal increase in the visible supply just ahead.

(3) While the cash premiums generally follow the upward trend of price of cash wheat in the second half of the year, there are more irregularities than in the first half. January, February, and March move in opposite directions because of the light cash supplies due to the freezing of the Great Lakes and absence of supplies in other producing countries. At the same time, the future falls in expectation of supplies from Argentina and Australia. From then to the end of the year the expectation of new crop supplies lowers the future price, thus widening the spread. The smaller spread in May is largely caused by the closing out of the May option which is the last option in the old crop. May future and the cash therefore become the same thing. The wide spread in June arises from the fact that the then current future is the July option, which applies to the new crop while the cash of course is old crop and relatively scarce.

(4) From November to July inclusive when the probabilities are in favor of a rise in price, they are at the same

time in favor of a smaller cash premium and vice versa.

(5) A change in recent years has taken place which has resulted in a larger cash premium than existed in pre-war time. July and August are exceptions, which are no doubt due to heavier marketing during those months than in the past.

(6) Cash premiums move inversely to visible supplies. The heavy visible supply depresses the cash price and at the same time the future taking account of lessened supplies in the future thus closing up the margin. The year 1928-29 is an example of this effect. Because of the excessively large visible the cash was forced into a discount.

(7) The probabilities are very high for inverse movements in cash premiums and terminal receipts. Receipts fluctuate more violently than the visible supply. Consequently the short time fluctuations in the spread are influenced more by receipts than by the visible supply.

(8) The greater cash premiums of recent years have resulted in more unfavorable hedging conditions; that is, it is more unfavorable for the selling hedges which make up the majority. The buying hedger is favored by such a condition, but there is apparently a minority of dealers who can take advantage of this condition.

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## REFERENCES

1. Report of Federal Trade Commission on the Grain Trade.
  - (a) Volume V, 1920.
  - (b) Volume VI, 1924.
  - (c) Volume VII, 1926.
2. Kansas City Board of Trade Yearbooks, 1910 to 1928.
3. United States Department of Agriculture Yearbooks, 1924, 1927.
4. Maynard, Weidler and Beckman. Principles of Marketing. The Ronald Press Co., New York. 1927.
5. Macklin, Theodore. Efficient Marketing in Agriculture. The Macmillan Co., New York. 1922.
6. Wright and Landon. Readings in Marketing Principles. Prentice-Hall, Inc., New York. 1926.
7. Green, R. H. and Stokdyk, E. A. Kansas Extension Bulletin No. 54, Judging Price Risks in Marketing Wheat. 1927.
8. Brown, Edmund. Marketing. Harper & Bros., New York. 1925.
9. Weld, L. D. H. Marketing Farm Products. The Macmillan Co., New York. 1916.