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Arthur Sogn
South Dakota State University

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PRODUCER STRATEGIES WHEN TRANSPORTATION DISTORTS PRICING OF GRAIN

by
Arthur B. Sogn*

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Summer Meeting July 15-17, 1980

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*Associate Professor of Economics

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PRODUCER STRATEGIES WHEN TRANSPORTATION DISTORTS PRICING OF GRAIN

Great Plains Agricultural Council
Summer Meeting

Western Hills, Oklahoma
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Arthur B. Sogn
Extension and Research Economist
South Dakota State University
Brookings, SD 57007

When George Washington traveled from his home to Philadelphia for the inauguration, it took about eight days to make the 200 mile trip. This fact doesn't seem to startle us until we realize that Washington had no advantage in travel over the people of ancient Babylon. George Washington and King Solomon lived 3,000 years apart, yet they had the same horsepower, the same plumbing, etc. Since the 17th century, the amount of potential knowledge has increased far beyond the quantity of actual knowledge. Dante is said to have known everything there was to know in western Christendom in the year 1300. Goethe knew the greater part of what there was to know in the year 1800 - but since the year 1831 (the year after a locomotive beat a horse in a race and the real beginning of modern technology) it has been impossible for the most intellectual person to master more than a fraction of what there is to know. Here we are--presumably the smartest generation in history--but there is more we don't know than any other generation.

Times are also changing in the transportation of our grains and in the historical relationships of grain prices and basis.[1] The fall of 1979 the price of cash grain in parts of the Midwest was farther below the futures than ever before in history. The historic relationships between cash and future prices, that one could estimate with a fair degree of confidence a year ahead, seemed to be gone. In many places, the railroad upon which the historic price relations were made, was gone. For periods of time there were either no firm cash bids offered to producers, or the price offered was far below historical prices in relation to the grain futures and terminal cash grain prices.

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[1] Basis in grain terminology is the difference between a grain future price and a cash price for a specific locality. Different localities are apt to have different basis for the same future. There is also a basis for each trading month such as a December basis, a March basis, a July basis, etc.

Table 1. Minneapolis and Country Point December Basis History for Corn as of November 1

Crop Year	Chicago Dec Future	Minn. Price	Minn. Basis	Trans. Cost/Bu.	Local Basis
1968	110	105	5 under	13	18 under
1969	117	110	7 under	13	20 under
1970	149	131	18 under	14	32 under
1971	115	103	12 under	15	27 under
1972	139	120	19 under	16	35 under
1973	240	220	20 under	17	17 under
1974	376	355	21 under	18	39 under
1975	278	261	17 under	19	36 under
1976	253	237	16 under	23	39 under
1977	218	196	22 under	24	46 under
1978	232	204	28 under	29	57 under
1979	258	225	33 under	37	70 under
1980					

Table 2. Sioux City and Country Point December Basis History for Corn as of November 1

Crop Year	Chicago Dec. Future	Sioux City Price	Sioux City Basis	Trans. Cost/Bu.	Local Basis
1968	110	104	6 under	11¢	17 under
1969	117	107	10 under	11¢	21 under
1970	149	128	21 under	12¢	33 under
1971	115	105	10 under	13¢	23 under
1972	139	124	15 under	14¢	29 under
1973	240	220	20 under	16¢	36 under
1974	376	345	31 under	17¢	48 under
1975	278	246	32 under	17¢	49 under
1976	253	225	28 under	21¢	49 under
1977	218	190	28 under	22¢	50 under
1978	232	204	28 under	25¢	53 under
1979	258	214	44 under	30¢	74 under
1980					

The basis given in Tables 1 and 2 is the basis for November 1 only. There were other days in November 1979 where the local basis reached more than a dollar a bushel under the future, for both corn and soybeans. Similar but not so great a spread in basis occured in other grains.

Why is this inconsistant basis a problem to grain producers? It's a problem for those who use basis to forward price grain, or to determine what crops to plant where alternative crops can effectively be produced. It's a problem when one has grain to sell, and there is no firm price available. It's a problem if one is going to hedge and historical price relationships are disturbed. However, problems can become opportunities if the proper logic and strategies can be applied. The first logical step would appear to be an analysis of what makes a wide basis and which of these ingredients are apt to persist in the coming months. Figure 1 attempts to identify such conditions and indicate their estimated relevance for the marketing years 1979-80 and 1980-81.

Figure 1. Estimated Basis Relationship 1979-80 and 1980-81

What Makes a Wide Basis	Conditions Affecting Basis 1979-80	1980-81
(1) Transportation		
(a) Increasing rates	yes	yes
(b) Irregular service	yes	improved
(c) Erratic rates	yes	improved
(2) Cost of Storage		
(a) Interest	15-19%	12-15 more stable
(b) Commercial rate	2¢/mo.	2¢/mo.
(c) Carrying charge in futures	Not a full carrying charge	same
(3) Risk	moderate	moderate
(4) Unusual demand for storage	yes	less demand
(5) Large than normal crops and stock (may vary by kind of grain)	yes	stock-yes crop-probably no
(6) Unstorable	no	no
(7) Decreased export demand	no	no

Table 3. ESTIMATED RETURNS PER ACRE FOR SELECTED GRAINS

Kind of Grain	Lock in *1 local price 2-22-80	Est.cash price at harvest or after	Out of *2 pocket cost of prod. per bu.	Total cost of prod.	Price of grain after out of pock. costs	Price of grain after total costs	Estimated yield per acre	Return per acre after out of pkt. cost	Return per acre after total costs	Crop rank in expected profit
CORN	2.23	2.40	1.31		1.09 .92		65	70.85 59.80		6
S.BEANS	6.13	5.30	2.55		3.58		25	89.50		2
WHEAT	3.80	3.50	1.57		2.23		30	66.90		5
OATS	1.40	1.60	.75		.85 .65		70	59.50 45.50		7
BARLEY	2.00	2.30	.86		1.44 1.14		60	86.40 68.40		4
SUNFLO.	9.20cwt		3.00		6.20		1600#	99.20		1
FLAXSEED	6.00		2.21		3.79		20	75.80		3
SORGHUM	2.15	2.40	1.30		1.10 .85		50	55.00 42.50		8

*1. Local prices could be elevator bid or futures price localized.
*2. For crop comparisons only out of pocket costs need be used as other costs the same for all crops

Based on the above analysis it can be concluded that the 1980-81 basis for the grain we are considering is not apt to be substantially wider than the 1979-80 basis even with expected increases in rail rates. With this information, a planting strategy can be determined where alternative crops can be produced. A marketing strategy can also be developed.

The marketing strategy would evolve from the analyses of the fundamentals primarily supply, demand or projected use and carryover. Some analysts use charts to estimate market trends, but these are usually short term trends. The market decisions to be made will be to sell before planting, before harvest, to store or a combination of all of these options. Decisions must also be made as to how much to sell, and whether to sell through use of futures or by cash grain contract. No attempt will be made to go into the advantages and disadvantages of various marketing methods in this paper.

Once one is aware of what the basis may be on the grains to be marketed, then profitability of alternative crops can be examined. Table 3, which is an actual worksheet completed by a group of South Dakota Farmers on February 27, 1980, demonstrates the process. The group decided ahead of time they wanted to use only out of pocket costs in the comparison. The lock in price often gives the informed producer the option of selecting a cash grain contract price or selling grain futures, whichever seems most advantageous at the time.

There are certain advantages in using futures to forward price grains.

Advantages in Pricing Grain With Futures

(1) It is simpler to adjust to changing conditions

(2) Futures offer alternatives in delivering grain
   (a) Time of delivery not so definite
   (b) You are not locked in to deliver at certain elevator
   (c) You need not deliver grain at all

(3) Pricing in futures not as contingent on having enough transportation at harvest time

(4) Usually simpler to offset in case of crop failure

(5) Futures may represent higher prices than cash grain contract prices.

Often futures represent a price considerably higher than the "to arrive" price. If this difference is 10 to 20 cents a bushel, the producer may agree to assume any risk in basis change himself and use the futures for price determination.

There are, of course, disadvantages to forward pricing grain with futures.

Disadvantages in Pricing Grain With Futures

(1) Margin deposit of about 15 percent of the value of the grain required

(2) Additional margins are required as market moves adversely to expectations

(3) Futures sales do not promise an exact price as they are based on historical relationships (Cash grain contracts offer an exact price)

(4) Not all grains are traded in futures, so certain grains such as rye, flaxseed, durum wheat, and barley cannot be hedged in a special future

(5) Futures trading requires training

One very good argument for learning how to understand and use futures is that there were several times and locations in the Midwest in 1978 and 1979 where no firm cash bid was offered to producers. Rail transportation was not available and the availability of truck transportation was not dependable. Rates for truck transportation, when it was available, were very erratic and unpredictable. Thus, grain buyers at local elevators either did not have a firm bid or they had no bid at all for producers.

Consider the example of the hard red spring wheat producer whose local elevator in 1979 could not give him a price on his wheat except at a historically wide basis. This was because there were no rail cars available and there was a strike at the Duluth port. This producer, because of land and operating capital payments, wanted to be assured he would not have to take less than the $3.70 per bushel the market should normally represent. Local elevators were bidding 20-25 cents a bushel less than this. The producer was advised to sell a Minneapolis December future to protect the price. On September 13 when Minneapolis December futures were at $4.29, he sold 5,000 bushels. On November 8, cars were again available, the strike was over creating a sharp demand for immediate delivery wheat. Cash wheat was bid at $3.86 and the December future was at $4.08. At this time the producer sold his wheat and lifted his hedge. How did he come out?

Figure 2. Pricing Hard Red Spring Wheat

Cash		Futures	
Basis - 59 9/13/79			
Cash Wheat Normal Value	$3.70	Sold Mpls Dec Wheat @	$4.29
Basis - 22 11/8/79			
Sold Cash Wheat @	$3.86	Bot Mpls Dec Wheat @	$4.08
Gain	$ .16	Gain	$ .21

The producer in this example gained a gross 37 cents a bushel from September 13 to November 8. He received a gross price of ($3.86 from elevator +21 cents from future) $4.07 for his wheat that he was trying to protect at $3.70. His costs were $50.00 for the complete in and out transaction for 5,000 bushel future contract and the interest on $600 of margin (hedging rate) for 41 days. The interest amounted to about $8. The historically wide basis on September 13 of 59 under narrowed to a historically narrow basis November 8 of 22 under. A historically wide basis means best opportunities for gain are in hedging or storing grain. A historically narrow basis suggests selling as the most profitable.

Next, consider the soybean producer who could not get what he thought was a reasonable bid on the soybeans that he harvested mid October 1979. This producer knew of increased plantings of soybeans in Brazil as well as the large increase in U.S. carryover stocks. Both of these factors signaled lower prices. On October 19, this producer sold January soybean futures at $6.77. The best cash bid he had on his soybeans that day was $5.76. On December 18, he was able to sell his soybeans for $5.96 and to lift his hedge at $6.61. How did this producer's hedge come out?

Figure 3. Pricing Soybeans

Cash		Futures	
Basis - 101 10/19			
Cash bid for soybeans	$5.76	Sold Chicago Jan. future	@ $6.77
Basis - 65 12/18			
Sold cash soybeans	$5.96	Bot Chicago Jan. future	@ $6.61
Gain	$ .20	Gain	$ .16

This soybean producer grossed ($5.96 from the elevator +16 cents from futures) $6.12 for soybeans that he was protecting at $5.76. The soybean price in this area declined about $1 per bushel, after December 18, 1979. Tables 1 and 2 show that transportation cost is a significant part of local basis.

A lack of transportation for grains is not a new problem. Some of the producer strategies used to combat the problem are not new either. The futures market is over 100 years old. It is just recently that producers have been interested in strategies that will help them in periods of no cash price bid or greatly lower prices because of a distorted cash - future price relationship. The high cost of production and the high cost of owning an inventory of grain have given impetus to this desire for some strategy to help producers get the highest price possible for their grains. By reviewing an actual experience of a producer in 1976, one can observe the hedging of wheat until it can be shipped.

On September 2, 1976, a farmer had his wheat harvested and wanted to sell it, but the surrounding grain elevators were full and could not take his grain. Nationally, the carryover of wheat was 435 million bushels in 1974-75, and 665 million in 1975-76. It was projected to be over 1 billion bushels in 1976-77. Because of the increase in supplies of wheat, this producer felt he needed price protection. The elevators were offering depressed prices for delayed shipment or would not offer a price until transportation was available. On September 2, when the local cash-price was $3.12 if he could have sold, and the Minneapolis March futures were at $3.57, this producer sold Minneapolis March futures to protect the price of wheat he had just completed harvesting and placed in his bins. He sold his wheat and lifted his hedge on September 30 when transportation was again available. At this time local cash wheat price had dropped to $2.78 per bushel and the Minneapolis March futures had dropped to $3.03.

Thursday Prices for Hard Spring Wheat Local Prices
Farmers Elevator Company, Hometown, U.S.A.

1976 Date	Local Cash (14 Pro)	Mpls. March Futures	1976 Basis
9/2	3.12	3.57	45
9/9	3.17	3.56	39
9/16	2.98	3.33	35
9/23	2.95	3.25	30
9/30	2.78	3.03	25

How did this producer come out with the hedging strategy used?

Figure 4. Pricing Wheat

Cash		Futures	
Basis - 45 9/2			
Wheat in bin value	$3.12	Sold Mpls. March wheat	@ $3.57
Basis - 25 9/30			
Sold cash wheat	$2.78	Bot Mpls. March wheat	@ $3.03
Loss	$ .34	Gain	$ .54

The producer got $2.78 from the elevator, and .54 cents from the futures, or he got ($2.78 + .54) $3.32 for his wheat. He not only protected his price of $3.12, he also got paid for the additional storage and handling.

There will likely continue to be times each year when transportation will not be adequate to accommodate delivery of grain from the farms. We cannot afford a transportation system that can handle all the grain during or immediately following harvesting of grain. Producers need to realize that selling or pricing need not be simultaneous with delivery. They must develop strategies that will establish a price, and whenever possible, adopt a strategy that will also pay for the cost of holding grain for an additional period of time.

The cost of holding an inventory must become a part of any marketing strategy because of its impact on net price received for commodities. For example, producers who store soybeans worth $6 per bushel while paying 16 percent for the capital to carry that inventory, were incurring an interest cost of 8 cents per bushel, per month. If they were to hold a soybean inventory 10 months under the above conditions, they would need an 80 cent a bushel price rise just to cover the interest cost.

We are talking about strategies that been available for a long period of time but that have not been used extensively by producers. They have not been used because we have not been effective in changing traditional

Table 4. Interest Cost for Holding Grain Inventory at Various Commodity Values and Interest Rates

	Cost in Dollars, Per Bushel, Per Month								
Bu. $	8%	9%	10%	11%	12%	13%	14%	15%	16%
1.00	.0067	.0075	.0083	.0092	.0100	.0108	.0117	.0125	.0133
1.25	.0083	.0094	.0104	.0115	.0125	.0135	.0146	.0156	.0167
1.50	.0100	.0112	.0125	.0138	.0150	.0163	.0175	.0188	.0200
1.75	.0117	.0131	.0146	.0161	.0175	.0190	.0204	.0219	.0233
2.00	.0133	.0150	.0167	.0183	.0200	.0217	.0233	.0250	.0267
2.25	.0150	.0169	.0188	.0207	.0225	.0244	.0263	.0281	.0300
2.50	.0167	.0188	.0208	.0229	.0250	.0271	.0292	.0313	.0333
2.75	.0183	.0206	.0229	.0253	.0275	.0298	.0321	.0344	.0367
3.00	.0200	.0225	.0250	.0275	.0300	.0325	.0350	.0375	.0400
3.25	.0217	.0244	.0271	.0298	.0325	.0352	.0379	.0406	.0433
3.50	.0233	.0262	.0292	.0321	.0350	.0379	.0408	.0438	.0467
3.75	.0250	.0281	.0313	.0344	.0375	.0406	.0438	.0469	.0500
4.00	.0267	.0300	.0333	.0367	.0400	.0433	.0467	.0500	.0533
4.25	.0283	.0319	.0354	.0390	.0425	.0460	.0496	.0531	.0567
4.50	.0300	.0338	.0375	.0413	.0450	.0488	.0525	.0563	.0600
4.75	.0317	.0356	.0396	.0436	.0475	.0515	.0554	.0594	.0633
5.00	.0333	.0375	.0417	.0458	.0500	.0542	.0583	.0625	.0667
5.25	.0350	.0394	.0438	.0482	.0525	.0569	.0613	.0656	.0700
5.50	.0367	.0413	.0458	.0504	.0550	.0596	.0642	.0688	.0733
5.75	.0383	.9431	.0479	.0527	.0575	.0623	.0671	.0719	.0767
6.00	.0400	.0450	.0500	.0550	.0600	.0650	.0700	.0750	.0800
6.25	.0417	.0469	.0521	.0573	.0625	.0677	.0729	.0781	.0833
6.50	.0433	.0488	.0542	.0596	.0650	.0704	.0758	.0813	.0867
6.75	.0450	.0506	.0563	.0619	.0675	.0731	.0788	.0844	.0900
7.00	.0467	.0525	.0583	.0642	.0700	.0758	.0817	.0875	.0933

Table 4. Continued

Bu. $	Cost in Dollars, Per Bushel, Per Month								
	8%	9%	10%	11%	12%	13%	14%	15%	16%
7.25	.0483	.0544	.0604	.0665	.0725	.0785	.0846	.0906	.0967
7.50	.0500	.0563	.0625	.0688	.0750	.0813	.0875	.0938	.1000
7.75	.0517	.0581	.0646	.0711	.0775	.0840	.0904	.0969	.1033
8.00	.0533	.0600	.0667	.0733	.0800	.0867	.0933	.1000	.0167
8.25	.0550	.0619	.0688	.0757	.0825	.0894	.0963	.1031	.1100
8.50	.0567	.0638	.0708	.0779	.0850	.0921	.0992	.1063	.1133
8.75	.0583	.0656	.0729	.0803	.0875	.0948	.1021	.1094	.1167
9.00	.0600	.0675	.0750	.0825	.0900	.0975	.1050	.1125	.1200
9.25	.0617	.0694	.0771	.0848	.0925	.1002	.1079	.1156	.1233
9.50	.0633	.0713	.0792	.0871	.0950	.1029	.1108	.1188	.1267
9.75	.0650	.0731	.0813	.0894	.0975	.1056	.1138	.1219	.1300
10.00	.0667	.0750	.0833	.0917	.1000	.1083	.1167	.1250	.1333

marketing methods. We have not convinced producers that there are ways of offsetting a position in the market and thereby eliminating a prevalent fear in forward pricing of grain and because of the possibility of having something happen to their crop.

In a recent survey of 796 South Dakota and Montana farmers, one of the questions asked was in regard to their willingness to forward price grain. About 60 percent responded they would forward price grain most or half of the time if it weren't for the fear of a crop loss.

Table 5. How Often Would You Contract To Sell Your Grain Ahead Of Harvest If It weren't For The Fear Of Being Short Of Crop At Delivery?

Response	Number	Percent
Most of the time	151	19.0
Half of the time	317	41.4
Hardly ever	297	38.8
No response	31	0.8
TOTAL	796	100.0

The Extension service at South Dakota State University offers a three-day workshop on the use of grain futures, where participants learn how to offset a position if their crop fails, or if they change their mind, and how they can roll a future ahead if they want to extend the time. After attending such a workshop, one producer sold his expected 1980 crop through the futures. He did this on December 21, 1979 at a price of 7.48 for the November 1980 future. He did this because he could lock in a price well above the cost of production. Time will tell if he would have been better off to not sell at that time, but as of June 1, 1980, he had a gain of 96 cents a bushel from the sale of the November 1980 futures.

I have mentioned grain futures often as a marketing strategy when inadequate transportation distorts normal price relationships. Futures are mentined often in this topic because they are in many instances the only price available. Futures also allow the greatest flexibility in extending price protection over a long period of time.

The alternatives for those who do not want to use futures to price grain when there is no transportation, range from none to very limited.

*They can use a cash grain contract if the elevator will offer them one. Contracted grain usually has preference over non-contracted, but when transportation is limited, contract prices may be lower than what would be normal market price.

*They can use a deferred payment contract, again if the elevator will offer them one. However, the deferred payment price is also often a depressed price when transportation is scarce.

*Or, they can take a cash contract for some time in the future subject to the availability of transportation. This is not a sure price protection, but it will protect the price if the transportation situation improves.

We can expect to continue to have problems in marketing grain and with transportation. Many of the existing problems will still be with us and new problems are on the horizon. Deregulation of transportation has some cited advantages, but it will also create additional problems in the estimating of local bases.

The ongoing shift in regulatory thinking and application by the ICC (Interstate Commerce Commission) and the FRA (Federal Railroad Authority) is to allow more market determination of rates, routes, and service. It appears this will be the prevalent political thinking for the forseable future. The variability of supply and demand for transportation by the grain sector, combined with the new deregulation thinking, will bring new problems in the estimation of basis in the future. If transportation rates and services fluctuate, the local basis is apt to be volitile and uncertain, making the grain futures strategy harder to employ. Ways to deal with this might be:

--Study the historical transportation demand patterns, incorporate current knowledge, and make informed predictions of future transportation rates and service and therefore local basis.

--Invest in ones own transportation by owning or leasing trucks or rail cars.

--Contract for transportation services, e.g., a local elevator contracting with the railroad or a trucking company for guaranteed rates and service. In turn, the local elevator guarantees to the carrier a minimum volume for the term of the contract.

Other methods of minimizing uncertainty will evolve as we experiment with deregulation of transportation.

The solutions to any problems caused by changes in demand, cost and availability of transportation are not to wait for what we may consider normalcy, but rather, to try to maximize returns under existing conditons. This may be done by following various courses of action:

--Find ways of establishing a price that is equal to or above a producers traditional time and method of selling grain

--Break from the association that pricing and delivery need be simultaneous

--Discard the near impossible goal of selling at the top of the market or buying at the low

--Understand and use the many marketing guides and tools that are currently available to us

--Use market information in determining what to plant where there are cropping alternatives

If we will do these things, then problems may become opportunities and we can quit talking about the labor pains and start showing off the baby.