A Case Study of a Market Advisory Service's Performance in Marketing Hard Red Winter Wheat in Kansas

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Abstract

Crop marketing, and specifically the efficiency of markets, is a topic of much interest and debate in the agricultural industry. This case study examines the effectiveness of a marketing advisory service (MAS) in pricing hard red winter wheat in Kansas. The post-harvest recommendations of this particular MAS followed by a wheat producer in northwest Kansas over a 32-year time period were analyzed. Results indicate that the net price received following the MAS's recommendations were statistically no better than simply selling at harvest given commercial storage costs and bank interest rates. With lower storage costs, the MAS did receive a premium of 13¢ per bushel compared to harvest sales. A cash marketer storing and selling grain at the same time as the MAS marketer, but without forward contracting, would have been 10¢ per bushel worse off than the MAS marketer. This MAS gain was due to its ability to secure a stronger basis level and pick up short term price movement gains. However, these strengths of the MAS were offset by its fees and by the fact that they tended to store wheat too long.

Introduction

Marketing success, or the lack thereof, is a topic of much interest and debate in the agricultural industry. Research conducted in the area of price risk management and grain marketing strategies for evaluating the performance of market advisory services (MASs) generally has compared several different MASs over a short period of time. Most of that research has focused on corn and soybeans marketing. Little research has examined MASs' performance in marketing wheat, especially hard red winter wheat, and especially over a long period of time. The lack of research in this area likely is because few resources are available to the public concerning MASs and their marketing programs in hard red winter wheat.

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Marketing crops is a topic that garners much attention in the agricultural industry. This is especially true in the popular press, as many farm magazines feature stories pertaining to marketing strategies and successes. However, most research has shown that the marketing strategies of MASs generally do not perform much, if any, better than simple strategies such as selling at harvest. The following research studies provide the necessary evidence to substantiate the previous statement. Martines-Filho (1996) examined pre-harvest marketing strategies of six market advisory services over four years (1991-1994). Gehrt and Good (1993) looked at five advisory services' recommendations for corn and soybeans over a five year span (1985-1989). Irwin, Jackson, Good, and Martines-Filho (2000) compared the advice of 25 market advisory services for corn and soybeans from 1995-1998. These three studies showed that there is some ability for marketing services to outperform the market, although the average benefit was small. More importantly, pending research publications by these same authors provides strong evidence that identifying those advisors that were historically superior in real time is most difficult. Thus, most evidence suggests that superior marketing advisors can be identified in hindsight but not in foresight.

It is important to point out that the studies listed above examined only corn and soybeans. Most recently, Jirik, Irwin, Good, Jackson, and Martines-Filho (2000) compared the performance of agricultural marketing services in marketing wheat from 1995 to 1998. They found that, when comparing the net price from the MASs to an appropriate benchmark price, the advisory services could not statistically outperform the market. The authors concluded, "Not only do market advisory programs in wheat consistently fail to 'beat the market,' their performance is significantly worse than the market" (p.10). Economically, this study showed that the benchmarks outperformed the marketing services by an average of $16 per acre per year in total revenue across the four years. It should be noted that the study was based on yield data for soft red winter wheat in southwestern Illinois, and futures prices used were quotes from the Chicago Board of Trade. The study provides some evidence that there are differences in marketing soft red winter wheat compared to corn and soybeans. In particular, it may be more difficult to "beat the market" in wheat than in corn and soybeans.

The research studies listed above suggest that grain markets are quite efficient, meaning that it is difficult to devise marketing schemes that can "beat the market." To date, we are unaware of any formal studies on *cash* marketing efficiency looking specifically at hard red winter wheat (HRW), whose underlying futures prices are traded on the Kansas City Board of Trade (KCBOT). Nevertheless, *futures* marketing efficiency for KCBOT wheat futures has been extensively studied and reported by Kastens and Schroeder (1996). In that study, which examined nearly 60 years of futures prices and trading, the authors used three different approaches to answering the underlying question of whether or not the futures market is efficient. Each of the three methods pointed to the same conclusion. That is, the KCBOT wheat futures market is extremely efficient, and among the most efficient commodity futures markets in the U.S. Consequently, if a HRW cash marketing advisor emerges that can "beat the market," it most likely would come from the basis side and not from the pricing side.

The debate regarding whether some individuals can "beat the market," as well as the never-ending interest in marketing, leads to the purpose of this study, which was to evaluate the performance of one MAS making marketing recommendations to a producer growing hard red winter wheat in northwestern Kansas over a period of approximately 30 years (1970-2002). Specifically, this study examined the National Farmers Organization (NFO) marketing program for one particular farmer considering only post-harvest sales. It is important to keep in mind that historical results may not be indicative of future performance. Furthermore, a post-harvest strategy only may not be indicative of performance for more complex strategies that may have been recommended by the NFO for other producers.

Because the focus of this research is one particular MAS (i.e., NFO), this research should be viewed more as a "case study" than as research about MASs in general. The main questions considered in our research reported here include the following: How does the MAS's harvest equivalent price (contracted price less storage, interest, freight, and marketing fees) compare to simply selling the entire crop at harvest time? How does the MAS's performance compare to a producer storing grain and selling it at the same time as that recommended by the MAS,

but at a cash price realized in the month of delivery? In other words, how do the returns to storage compare for the two strategies? Lastly, what happened to the basis and futures price levels between the date the MAS contracted wheat and locked in a price, and the date the grain was delivered?

Methods and Data

A single wheat producer in northwestern Kansas, who followed only the post-harvest advice of the MAS as to when and how to market his wheat, supplied the data for this research. Each available sales contract was recorded along with the information that was consistently listed on the contracts from 1970 to 2002. In the data provided to the authors, perhaps due to crop failure among other reasons, there were no contracts for the years 1977, 1978, 1985, 1988, 1989, and 1999. The relevant information recorded for each contract include the date contracted, date delivered, contract I.D., MAS contract lot number, contract price, freight, spot price (local cash price received for bushels above contracted amount), contracted bushels, spot bushels delivered (bushels delivered above contracted amount), total bushels delivered, and the total MAS fees.[1, 2]

After organizing the data and entering all relevant information in an Excel spreadsheet, the next step was to subtract the relevant costs from the contract price to calculate a harvest equivalent price (net price received) for comparison to a harvest time price that might have been received by the producer had he not been using the MAS. The relevant costs include physical storage cost, interest (opportunity cost, or the amount of money given up by storing instead of selling at harvest time), freight for hauling the grain, and MAS marketing fees.[3] To calculate the interest cost on the grain being stored, an annual non-real-estate interest rate on new farm loans from various issues of the Federal Reserve System's *Agricultural Finance Databook*, was converted to a daily rate (i.e., annual rate divided by 365), and then multiplied by a Kansas Agricultural Statistics (KAS) June/July average cash wheat price for the northwestern crop reporting district (D10). This was then multiplied by the number of days from the harvest date (assumed to be July 1 each year) to the delivery date listed on the scale ticket of the contracted wheat. Initial physical storage cost was calculated using a 2.6 cents per bushel per month (2.6¢/bu/mo) (approximate rate for commercial storage over much of the study period), divided by 30 to make it a daily charge of 0.08667¢/bu, which was then multiplied by the number of days from harvest to delivery. The MAS harvest equivalent (HE) price was calculated as

(1) MAS HE price = contract price – storage cost – interest – freight – MAS marketing fees.

Comparison of KAS harvest price and the MAS harvest equivalent price

In order to more appropriately compare the KAS harvest price to the MAS harvest equivalent price, a weighted average MAS harvest equivalent price was computed within each year, but not across years. This was done because, in most of the years, the producer delivered different amounts of grain on different contracts for a single production year. For example, if the producer signed two contracts, one for 1,600 bushels, and another one for 800 bushels, to be delivered at different future dates, the first contract will have a weight of two-thirds on the overall average price for that production year. The second contract will have a weight of one-third on the overall price. The average KAS harvest price for the 27 years of data was $2.83/bu compared to an average MAS weighted average harvest equivalent price was $2.81/bu (Table 1). Harvest prices at grain elevators surrounding the location of the producer were compared to the KAS harvest prices to confirm that the KAS harvest price was a legitimate benchmark to use for comparison.[4]

The two average harvest equivalent prices (KAS: $2.83; MAS: $2.81) suggest that, on average, over the 27 years, the producer would have been slightly better off had he simply sold at harvest each year. That is, the MAS was not able to get a better price when compared to the simple strategy of selling the grain at harvest time, at least on average. Eleven years out of the 27 (40.7%) the MAS outperformed selling at harvest. Over the sixteen years in which selling at harvest was more profitable, the producer received an average of $0.45 more per bushel, but over the eleven years in which it was more profitable to follow the recommendations of the MAS, the producer received an average of $0.60 more per bushel. A paired t-test comparing the mean prices for the KAS harvest price and the MAS harvest equivalent price indicated that the two mean prices were not statistically different from each other at the 95 percent

confidence level. This result suggests that cash wheat markets are fairly efficient, at least in terms of returns to storage. That is, over long time periods, marketing at various times throughout the year results in similar harvest equivalent prices (i.e., the returns to storage are essentially equal to the cost of storing). Kastens and Dhuyvetter (1999) examined post-harvest grain storing and hedging strategies from 1985 to 1997 for multiple Kansas locations to determine if these marketing techniques could be used to profit from cash market inefficiencies. They concluded that these strategies did not find additional profit from market inefficiencies, and that "based on this research, it would be inappropriate to reject cash market efficiency" (p. 349).

Table 1 reported an annual average MAS marketing fee of $0.08/bu. If that fee were zero, the weighted average harvest equivalent price for the MAS would have been $2.89/bu. That $2.89 average would be statistically greater than the $2.83/bu KAS average at a confidence level greater than 98 percent. Thus, it may be that the MAS has superior marketing skills, but its skills are not great enough to cover the cost of running its marketing program.

Low storage cost scenario

The storage costs assumed above (2.6¢/bu/mo along with a bank interest rate) are considered representative of a producer storing his wheat in a commercial elevator and where the wheat is not under a government loan program. Interest rates charged by the Commodity Credit Corporation (CCC) on government loans have averaged 65.8 percent of the bank interest rate over 1982-2002, where such data were readily available. Furthermore, insofar as on-farm grain storage facilities may be considered a "sunken" investment, the relevant physical grain storage cost to consider here would be only the variable cost of storage. Consequently, besides the "commercial storage and bank interest" scenario, which we refer to as the high-cost scenario, we also consider a low-cost scenario, which assumes arbitrarily a 1.3¢/bu/mo physical storage cost, coupled with an interest rate equal to 65.8 percent of the bank interest rate.

Relative to the high-cost scenario, in the low-cost scenario the weighted average MAS harvest equivalent price increased from $2.81/bu to $2.96/bu (a 15¢/bu increase because of the lower storage costs assumed; see bottom line in Table 1). Now, compared to the weighted average KAS harvest price of $2.83/bu, the MAS was able to achieve 13¢/bu above the KAS harvest price, on average, over the 27 years observed ($2.96 - $2.83 = $0.13/bu). In addition, the MAS was able to outperform the KAS harvest price in 15 of the 27 years, while returning to the producer an annual average of $0.55 more per bushel during those 15 years. The KAS harvest price outperformed the MAS harvest equivalent price in 12 of the 27 years, returning an annual average of .$0.39 more per bushel to the producer over those 12 years.

To help understand the impact of this analysis, consider the following example. If a producer follows the MAS's advice, and sells an average of 3,000 bushels of wheat in each of the fifteen years that the MAS harvest price outperformed the KAS harvest price for an additional price of $0.55/bu, the producer stands to gain about $24,750. But, if the producer sells 3,000 bushels in each of the twelve years that the MAS harvest price was $0.39/bu less than the KAS harvest price, the producer would be worse off by about $14,040. Nevertheless, over the entire 27 year period, the producer would have gained about $10,710 ($24,750 - $14,040) by following the MAS's marketing plan, using the low storage cost scenario.

Comparison of storage strategies: Cash marketer vs. MAS marketer

The next question considered in this study was: How does the MAS's strategy (MAS marketer) of using forward contracts to lock in price, and hence basis (difference between cash and futures price), compare to a producer marketing at the same time without the use of forward contracts (cash marketer)? One reason a cash marketer may want to store grain is to achieve a higher selling price sometime post-harvest. One signal that may help a grain producer with the decision, as to whether or not to store his grain at harvest, is to compare the current harvest basis with the historical basis. If, at harvest time, the basis is unusually weak (cash price is much lower than the futures price) when compared to an historical average basis level, a producer may want to store the grain, as this suggests the current cash price may be "too low" relative to the futures price. The belief, in that case, is that the cash price has a better than average chance of increasing, until it brings the basis level closer to the average level. So, if a producer (cash marketer) decided to store the grain with hopes of higher prices, he/she is going to incur the additional cost of storage and interest.

In this part of the research, the first assumption made was that the cash marketer sold the grain on the same day as the MAS marketer did. The second assumption was that the cash marketer and the MAS marketer were charged exactly the same rates for storage and interest ($0.08667/bu/day + interest, which was the cost for the high-cost scenario). The cash marketer's average net price received was calculated by subtracting the total amount of storage and interest cost from the KAS monthly average cash wheat price on the date of delivery. The cash marketer's average net price was $2.71/bu over the 27-year period (Table 2). The MAS marketer's weighted (weighted by contract within year) average net price received was calculated as in the high-cost scenario earlier, by subtracting the total amount of storage, interest, freight, and MAS marketing fees from the weighted average contract price. The weighted average net price received for the MAS marketer was $2.81/bu over the 27-year period (Table 2). This gives the MAS marketer a return of $0.10/bu over the cash marketer. Over the 27 years analyzed, 19 years (70.4%) the MAS marketer was more profitable than the cash marketer selling at the same time without forward contracting. During the 19 years the MAS marketer was more profitable, he received an annual average profit of $0.19/bu over the cash marketer. During the seven years when the cash marketer was more profitable, he received an annual average profit of $0.13/bu over the MAS marketer.

The above results indicate that the MAS marketer received a higher average net price per bushel over the 27 years recorded when compared to the cash marketer. Another way of looking at this comparison is that the MAS marketer was able to achieve greater returns from storage than the cash marketer. Based on a paired t-test comparing the two price series, it can be concluded that the mean net price for the MAS marketer was statistically higher than the cash marketer's mean net price with greater than 99 percent confidence. This implies that the forward contracting strategy of the MAS was effective at "beating the market" as it resulted in a consistently higher price than someone marketing at the same time in the cash market.

Basis and futures price movements over the 27 years of data (a 32-year time span)

The last question asked in this research was: What happened to the basis and futures price levels from the date the grain was contracted, locking in price and basis, to the date the grain was actually delivered? First, a simple explanation of basis is necessary to understand what happened in this study. Basis is the difference between the cash price and the futures price (cash minus futures). Basis is determined by several components, for example, transportation costs of shipping the grain, local supply and demand for the grain, the availability of substitutes for the grain at a specific location, and quality of the grain.

In order to explain what happened to the basis, the basis movement was calculated. Basis movement is the difference between the basis on the date the grain was delivered (ending basis, or the market basis at delivery) and the date the grain was contracted (beginning basis, or the basis locked in by the MAS), expressed as beginning basis less ending basis.[5] The calculation of basis movement explains how the cash price moves in relation to the futures price from the contract date to the delivery date. If, on average over the time period studied, the basis weakened (ending cash price decreased relative to futures price), then it can be said that a stronger basis level was locked in on the contract date, indicating that the MAS was able to "beat the market" regarding basis, or that it was likely able to extract a "better than usual" forward cash bid price from the grain buyer. If, on average, the basis strengthened (i.e., ending cash price increased relative to futures price), then a weaker basis level was locked in on the contract date.

The basis movement in this study was first calculated by finding the ending basis, which was figured as the KAS monthly cash price on the delivery date minus the nearby delivery futures price on the delivery date. The beginning basis was calculated as the contract price established on the contract date minus the deferred futures price for the futures contract that would be the nearby contract at delivery time (Table 3). For example, for grain contracted on August 1 to be delivered on March 15, the beginning basis would be the contract price established August 1, minus the May futures price quoted on August 1. The futures price used in this study was never from the delivery month futures contract. Instead, the futures price in the next closest month to delivery was always used to calculate basis. For example, if the wheat was delivered in the month of May, the July futures contract was used, rather than the May contract. This is consistent with the idea that grain marketers and elevators start pricing off of the "next out" contract as time approaches the delivery month.

For the next step in this analysis, the weighted average basis movement was calculated by subtracting the ending basis from the beginning basis, for each of the 27 years analyzed (Table 4). The overall weighted average basis movement for the 27 years was $0.10/bu (Table 4). Thus, the basis weakened on average by $0.10/bu from the date the grain was contracted to the date of delivery. This means that, on average, the MAS marketer was able to lock in an extra $0.10/bu by contracting the grain before delivery, relative to someone selling at the same delivery time in the cash market. A paired t-test between the beginning basis and the ending basis showed that the average MAS advantage of $0.10/bu was significantly greater than zero at a confidence level greater than 99 percent.

In addition to knowing how the MAS strategy performed with regards to basis changes, it is important to recognize how it did with regard to price levels. Thus, futures price movement also explains the performance of the MAS, and its story about whether the MAS can "time the market." The calculation of the futures price movement helps determine whether the MAS was contracting the wheat when futures prices were higher than at delivery (i.e., did they do a good job of "picking prices"). Just as if the producer were hedging, he/she would want to sell at a high futures price and buy it back at a lower futures price at a future point in time. Essentially, the futures price movement shows how well the MAS used market timing to achieve a higher price.

The futures price movement was calculated by subtracting the futures price quoted on the delivery date from the futures price quoted on the contract date, using the same futures contract month. This determines how much the futures price increased or decreased from the contract date to the delivery date. The results showed that, on average, the weighted average futures price decreased by $0.07/bu from the contract date to the delivery date over the 27 years analyzed (Table 4). This translates into a MAS advantage of about seven cents per bushel due to market timing. Statistically, this $0.07/bu MAS advantage was greater than zero at a confidence level of 96 percent.

Another point worth mentioning is that, if you add the $0.08 average MAS marketing fee back into the weighted average MAS contract price of $2.81/bu reported in the high-cost scenario in Tables 1 and 2, you would have a before-marketing-advisory-service-fees price of $2.89/bu. Comparing this price with the weighted average KAS cash price at delivery of $2.71/bu reveals a difference of $0.18/bu, which is approximately the gain from the basis movement ($.10/bu.) plus the gain from the futures movement ($.07/bu).[6] Thus, before the MAS marketing fee, there was a $0.18/bu profit realized for the MAS marketer, compared to a cash marketer selling at the same time without contracting, due to the basis and futures movement. However, it also needs to be pointed out that, while the MAS marketer was better off than a cash marketer selling at the same time, neither was as good as simply selling at harvest.

Conclusion

As noted earlier, Kastens and Dhuyvetter (1999), in a 1985-1997 analysis of post-harvest grain storing and hedging strategies for multiple Kansas locations, found that cash market efficiency could not be rejected. That means, it likely would be most difficult to devise cash marketing strategies that can consistently "beat the market." With similar overall findings here, it appears that the marketing advisory service (MAS) examined in this study is not capable of "beating the market" either, at least not to the extent that its marketing gains are high enough to more than offset the fees it charges its customers.

Comparing the MAS's harvest equivalent price to the cash price at harvest (using a 2.6¢/bu/mo storage cost, 100% of the bank interest rate), it appears that the MAS was not able to achieve a higher level of profit for the producer than by simply selling at harvest. However, when considering a low storage cost scenario (1.3¢/bu/mo storage cost and 65.8% of the bank interest rate), which may be more indicative of on-farm storage costs, the MAS was able to achieve about $0.13/bu above the KAS harvest price, on average, over the 27 years examined. Potential areas of MAS marketing success are as follows. First, from the time the MAS forward contracted until the time of delivery, futures prices fell, on average, by about $0.07/bu. This indicates that the MAS appeared to have superior short-term market timing skills. Secondly, through its forward contracts, the MAS was able to lock in a basis that averaged around $0.10/bu better than what the cash marketer would have obtained by delivering and selling cash grain at the same time the MAS's forward contracts were delivered on.

In summary, it appears the MAS has poor long-term cash market timing skills, perhaps causing the wheat to be stored too long. That is, the cash market at delivery, after adjusting for interest and storage, was around $0.10/bu lower than at harvest. But the MAS was able to gain this $0.10/bu back by getting a superior forward bid (i.e., locking in a good basis). Furthermore, the MAS was able to pick up another $0.07/bu with superior short-term market timing. But, from the customer standpoint, this net gain of around $0.07/bu was offset by the MAS marketing fee, which averaged around $0.08/bu. The end result is that the producer, by following the MAS, ended up with a slightly lower harvest equivalent price (2¢/bu lower) than he/she would have received by simply selling in the cash market at harvest. All in all, this research would suggest that the MAS's advantage might lie mostly in the area of "obtaining a good forward cash bid price" from a grain buyer, rather than in being a superior market timer regarding how long wheat should be stored after harvest or regarding when a pricing trigger should be pulled. Finally, the MAS would be substantially more beneficial for those with especially low storage costs.

Endnotes

[1] MAS fees include Iowa Trust, (1/3 of 1%), Buyer W/Inspec., Marketing fee, Local Funding fee, Program expansion fee, Check-Off fee, and Reserve fee.

[2] Some of the dates the wheat was contracted were missing. In these cases, we assumed a contract date based on the average number of days from contract to delivery for the other contracts with delivery dates in the same month of the year. There were also several delivery dates missing, here we assumed a delivery date based on the other contracts within the same time frame. One contract had a date contracted in 1995, but this was not consistent with the rest of the information on that contract; therefore, we assumed it to be 1996. For another contract the grain was never delivered because there were no rail cars to ship the grain; therefore, the grain was sold at a local elevator for a contract price = cash price at delivery less the contract buyout price. If the total bushels delivered were not known, we assumed the total bushels delivered were the number of bushels contracted.

[3] MAS related freight was specifically listed on some of the contracts, and other times it was listed as a separate expense to the producer, which we called farmer freight. All freight was taken out of the basis to remove location bias from our reported basis values. That is, it is not particularly interesting or relevant to compare a basis calculated using a Houston, Texas delivery point and cash price, with a basis calculated using a northwest Kansas cash price (as in a "picked up at the farm" price).

[4] Weekly prices from September 1998 through December 2002 reported by DTN AgDayta for two locations (within approximately 20 miles of the producer's operation) were aggregated to monthly prices and compared to the KAS northwest district price. The average difference between the location-specific average and the district average was $0.00 over the 52-month period where data were available. Thus, the KAS longer-term price series appears to be a reasonable benchmark for this producer's cash price.

[5] In calculating the basis movement, the monthly KAS cash price and the monthly KCBOT futures price were used to calculate the basis at delivery, whereas the MAS contract price and the KCBOT daily futures price were used to calculate the basis on the date the wheat was contracted.

[6] Due to rounding error, the basis advantage plus the futures advantage (17¢/bu) did not exactly equal the 18¢/bu difference between the KAS cash price at delivery and the before-marketing-advisory-service-fees price.

References

Dhuyvetter, K.C. "On-farm vs. Commercial Grain Storage in Kansas." pgs. 18. *In* T. Kastens (ed) Risk and Profit Management Conference Proceedings. Kansas State University. August 19-20, 1999. Manhattan, KS.

Gehrt, D. and D. Good. "Evaluation of Market Advisory Services for Corn and Soybeans." *Journal of the American Society of Farm Managers and Rural Appraisers* 57(1993):1-7.

Irwin, S.H., T.E. Jackson, D.L. Good and J. Martines-Filho. "The performance and marketing Behavior of Agricultural Market Advisory Services: Evidence for Corn and Soybeans Over 1995-1998." Unpublished working paper, Department of Agricultural and Consumer Economics, University of Illinois-Champaign, February 2000.

Jirik, M.A., D.L. Good, S.H. Irwin, T.E. Jackson and J. Martines-Filho. "1995 Through 1998 Pricing Performance of Market Advisory Services for Wheat." AgMAS Project Research Report 2002-02, forthcoming.

Jirik, M.A., S.H. Irwin, D.L. Good, T.E. Jackson and J. Martines-Filho. "The Performance of Agricultural Market Advisory Services in Marketing Wheat." In NCR-134 *Conference on Applied Commodity Price Analysis, Forecasting, and Market Risk Management*, pp. 49-67. Chicago, Illinois, April 17-18, 2000.

Kastens, T.L., and K.C. Dhuyvetter. "Post-Harvest Grain Storing and Hedging with Efficient Futures." *Journal of Agricultural and Resource Economics*. 24(2,1999):482-505.

Kastens, T.L., and T.C. Schroeder. "Efficiency Tests of July Kansas City Wheat Futures." *Journal of Agricultural and Resource Economics*. 21(2,1996):187-198.

Table 1. Weighted Average Values Used to Calculate the MAS Harvest Equivalent Price Compared to the KAS Harvest Price for the 27 Years Analyzed

Year[a]	Contract Price $/bu	Total Storage Cost $/bu	Total Interest Cost $/bu	Freight Cost $/bu	MAS Cost $/bu	MAS HE Price $/bu	KAS June/July Average Harvest Price $/bu
1970	$1.55	$0.19	$0.05	$0.22	$0.02	$1.07	$1.08
1971	$1.53	$0.21	$0.07	$0.22	$0.02	$1.01	$1.25
1972	$2.13	$0.24	$0.07	$0.08	$0.01	$1.73	$1.22
1973	$5.02	$0.13	$0.08	$0.33	$0.03	$4.46	$2.27
1974	$4.77	$0.16	$0.16	$0.37	$0.02	$4.05	$3.55
1975	$3.80	$0.14	$0.12	$0.22	$0.04	$3.27	$3.00
1976	$2.86	$0.15	$0.14	$0.36	$0.04	$2.17	$3.22
1978	$3.17	$0.24	$0.19	$0.39	$0.04	$2.32	$2.58
1980	$4.26	$0.21	$0.34	$0.40	$0.04	$3.27	$3.43
1981	$4.07	$0.16	$0.33	$0.19	$0.11	$3.29	$3.60
1982	$3.77	$0.18	$0.31	$0.29	$0.14	$2.86	$3.26
1983	$3.52	$0.16	$0.22	$0.00	$0.08	$3.06	$3.34
1984	$3.68	$0.07	$0.10	$0.00	$0.06	$3.46	$3.22
1986	$2.44	$0.25	$0.18	$0.00	$0.09	$1.92	$2.06
1987	$2.73	$0.19	$0.14	$0.00	$0.05	$2.35	$2.24
1990	$2.34	$0.22	$0.22	$0.00	$0.09	$1.82	$2.76
1991	$3.73	$0.20	$0.15	$0.00	$0.10	$3.29	$2.42
1992	$3.36	$0.23	$0.18	$0.00	$0.10	$2.85	$3.12
1993	$3.49	$0.20	$0.12	$0.00	$0.10	$3.07	$2.63
1994	$3.70	$0.21	$0.16	$0.00	$0.10	$3.23	$2.95
1995	$4.74	$0.14	$0.17	$0.00	$0.11	$4.33	$4.08
1996	$4.30	$0.11	$0.15	$0.00	$0.11	$3.93	$5.11
1997	$3.21	$0.24	$0.23	$0.00	$0.12	$2.62	$3.21
1998	$2.50	$0.29	$0.22	$0.00	$0.12	$1.87	$2.60
2000	$2.96	$0.26	$0.20	$0.00	$0.13	$2.39	$2.52
2001	$2.69	$0.25	$0.17	$0.00	$0.12	$2.13	$2.70
2002	$4.39	$0.15	$0.10	$0.00	$0.10	$4.01	$3.10
Avg.	$3.36	$0.19	$0.17	$0.11	$0.08	$2.81	$2.83
Low storage cost scenario [(50% * storage cost) + (65.8% * interest cost)]							
Avg.	$3.36	$0.19	$0.17	$0.11	$0.08	$2.96	$2.83

[a] *Years not available: 1977, 1979, 1985, 1988, 1989, 1999*

Table 2. Weighted Average Prices Comparing Storage Strategies (delivery time sales)

	Cash Marketer			MAS Marketer					
Year	Cash Price @ Delivery $/bu	Storage Cost $/bu	Cash Marketer's Net Price $/bu	Contract Price $/bu	Storage Cost $/bu	MAS Marketing Fees $/bu	Freight $/bu	MAS Marketer's Net Price $/bu	MAS Advantage $/bu
1970	$1.26	$0.25	$1.01	$1.55	$0.25	$0.02	$0.22	$1.07	$0.06
1971	$1.24	$0.28	$0.96	$1.53	$0.28	$0.02	$0.22	$1.01	$0.05
1972	$1.94	$0.31	$1.63	$2.13	$0.31	$0.01	$0.08	$1.73	$0.10
1973	$4.28	$0.21	$4.07	$5.02	$0.21	$0.03	$0.33	$4.46	$0.39
1974	$3.89	$0.32	$3.56	$4.77	$0.32	$0.02	$0.37	$4.05	$0.49
1975	$3.47	$0.26	$3.21	$3.80	$0.26	$0.04	$0.22	$3.27	$0.06
1976	$2.35	$0.29	$2.06	$2.86	$0.29	$0.04	$0.36	$2.17	$0.11
1978	$3.04	$0.43	$2.61	$3.17	$0.43	$0.04	$0.39	$2.32	($0.29)
1980	$3.70	$0.55	$3.15	$4.26	$0.55	$0.04	$0.40	$3.27	$0.12
1981	$3.69	$0.48	$3.21	$4.07	$0.48	$0.11	$0.19	$3.29	$0.08
1982	$3.36	$0.48	$2.88	$3.77	$0.48	$0.14	$0.29	$2.86	($0.02)
1983	$3.27	$0.38	$2.89	$3.52	$0.38	$0.08	$0.00	$3.06	$0.17
1984	$3.32	$0.17	$3.15	$3.68	$0.17	$0.06	$0.00	$3.46	$0.31
1986	$2.40	$0.43	$1.97	$2.44	$0.43	$0.09	$0.00	$1.92	($0.05)
1987	$2.64	$0.33	$2.31	$2.73	$0.33	$0.05	$0.00	$2.35	$0.04
1990	$2.42	$0.43	$1.99	$2.34	$0.43	$0.09	$0.00	$1.82	($0.17)
1991	$3.73	$0.35	$3.38	$3.73	$0.35	$0.10	$0.00	$3.29	($0.10)
1992	$3.07	$0.41	$2.66	$3.36	$0.41	$0.10	$0.00	$2.85	$0.19
1993	$3.27	$0.32	$2.94	$3.49	$0.32	$0.10	$0.00	$3.07	$0.12
1994	$3.36	$0.37	$2.99	$3.70	$0.37	$0.10	$0.00	$3.23	$0.23
1995	$4.79	$0.30	$4.49	$4.74	$0.30	$0.11	$0.00	$4.33	($0.15)
1996	$4.32	$0.26	$4.07	$4.30	$0.26	$0.11	$0.00	$3.93	($0.13)
1997	$2.95	$0.47	$2.48	$3.21	$0.47	$0.12	$0.00	$2.62	$0.13
1998	$2.26	$0.51	$1.76	$2.50	$0.51	$0.12	$0.00	$1.87	$0.12
2000	$2.66	$0.44	$2.22	$2.96	$0.44	$0.13	$0.00	$2.39	$0.17
2001	$2.67	$0.45	$2.22	$2.69	$0.45	$0.12	$0.00	$2.13	($0.10)
2002	$3.71	$0.28	$3.43	$4.39	$0.28	$0.10	$0.00	$4.01	$0.58
Avg.	$3.08	$0.36	$2.71	$3.36	$0.36	$0.08	$0.11	$2.81	$0.09
Low storage cost scenario [(50% * storage cost) + (65.8% * interest cost)]									
Avg.	$3.08	$0.21	**$2.87**	$3.36	$0.21	$0.08	$0.11	**$2.96**	**$0.09**

[a] *Years not available: 1977, 1979, 1985, 1988, 1989, 1999*

Table 3. Beginning and Ending Cash Prices, Futures Prices, and Basis

	Cash Marketer			MAS Marketer		
Year	Cash Price @ Delivery $/bu	Futures Price @ Delivery $/bu	Ending Basis (market basis @ delivery) $/bu	Contract Price $/bu	Futures Price @ Date Contracted $/bu	Beginning Basis (basis locked in by MAS) $/bu
1970	$1.26	$1.52	($0.26)	$1.55	$1.55	($0.22)
1971	$1.24	$1.49	($0.25)	$1.53	$1.44	($0.14)
1972	$1.94	$2.23	($0.29)	$2.13	$2.07	($0.02)
1973	$4.28	$4.82	($0.55)	$5.02	$4.97	($0.27)
1974	$3.89	$4.28	($0.39)	$4.77	$4.77	($0.38)
1975	$3.47	$3.92	($0.45)	$3.80	$3.80	($0.23)
1976	$2.35	$2.88	($0.53)	$2.86	$2.99	($0.49)
1978	$3.04	$3.41	($0.37)	$3.17	$3.15	($0.36)
1980	$3.70	$4.52	($0.82)	$4.26	$4.74	($0.88)
1981	$3.69	$4.22	($0.53)	$4.07	$4.26	($0.37)
1982	$3.36	$3.79	($0.43)	$3.77	$3.75	($0.27)
1983	$3.27	$3.63	($0.37)	$3.52	$3.74	($0.23)
1984	$3.32	$3.72	($0.41)	$3.68	$3.72	($0.03)
1986	$2.40	$2.71	($0.31)	$2.44	$2.68	($0.24)
1987	$2.64	$3.18	($0.54)	$2.73	$3.10	($0.37)
1990	$2.42	$2.84	($0.42)	$2.34	$2.70	($0.35)
1991	$3.73	$4.15	($0.42)	$3.73	$3.96	($0.23)
1992	$3.07	$3.34	($0.26)	$3.36	$3.39	($0.03)
1993	$3.27	$3.58	($0.31)	$3.49	$3.75	($0.26)
1994	$3.36	$3.65	($0.28)	$3.70	$3.90	($0.20)
1995	$4.79	$4.99	($0.20)	$4.74	$4.86	($0.11)
1996	$4.32	$4.46	($0.14)	$4.30	$4.69	($0.39)
1997	$2.95	$3.31	($0.35)	$3.21	$3.52	($0.32)
1998	$2.26	$2.83	($0.56)	$2.50	$3.11	($0.61)
2000	$2.66	$3.16	($0.50)	$2.96	$3.31	($0.35)
2001	$2.67	$2.85	($0.18)	$2.69	$2.83	($0.14)
2002	$3.71	$3.85	($0.14)	$4.39	$4.48	($0.09)
Avg.	$3.08	$3.46	($0.38)	$3.36	$3.53	($0.28)

▫ *Years not available: 1977, 1979, 1985, 1988, 1989, 1999*

Table 4. MAS Total Advantage from Basis and Futures: Basis Advantage (beginning basis – ending basis) + Futures Advantage (futures prices at date contracted – futures prices at delivery)

	MAS Basis Advantage			MAS Futures Advantage			
Year	Ending Basis (market basis @ delivery) $/bu	Beginning Basis (basis locked in by MAS) $/bu	MAS Basis Advantage $/bu	Futures Price @ Delivery $/bu	Futures Price @ Date Contracted $/bu	MAS Futures Advantage $/bu	MAS Total Advantage $/bu
1970	($0.26)	($0.22)	$0.04	$1.52	$1.55	$0.03	$0.08
1971	($0.25)	($0.14)	$0.11	$1.49	$1.44	($0.04)	$0.07
1972	($0.29)	($0.02)	$0.27	$2.23	$2.07	($0.16)	$0.11
1973	($0.55)	($0.27)	$0.27	$4.82	$4.97	$0.14	$0.42
1974	($0.39)	($0.38)	$0.01	$4.28	$4.77	$0.50	$0.51
1975	($0.45)	($0.23)	$0.22	$3.92	$3.80	($0.12)	$0.10
1976	($0.53)	($0.49)	$0.04	$2.88	$2.99	$0.11	$0.15
1978	($0.37)	($0.36)	$0.01	$3.41	$3.15	($0.26)	($0.25)
1980	($0.82)	($0.88)	($0.07)	$4.52	$4.74	$0.22	$0.16
1981	($0.53)	($0.37)	$0.15	$4.22	$4.26	$0.04	$0.20
1982	($0.43)	($0.27)	$0.15	$3.79	$3.75	($0.04)	$0.12
1983	($0.37)	($0.23)	$0.14	$3.63	$3.74	$0.11	$0.25
1984	($0.41)	($0.03)	$0.38	$3.72	$3.72	($0.01)	$0.37
1986	($0.31)	($0.24)	$0.07	$2.71	$2.68	($0.03)	$0.04
1987	($0.54)	($0.37)	$0.17	$3.18	$3.10	($0.09)	$0.09
1990	($0.42)	($0.35)	$0.06	$2.84	$2.70	($0.14)	($0.08)
1991	($0.42)	($0.23)	$0.19	$4.15	$3.96	($0.19)	$0.00
1992	($0.26)	($0.03)	$0.23	$3.34	$3.39	$0.06	$0.29
1993	($0.31)	($0.26)	$0.06	$3.58	$3.75	$0.16	$0.22
1994	($0.28)	($0.20)	$0.08	$3.65	$3.90	$0.25	$0.34
1995	($0.20)	($0.11)	$0.09	$4.99	$4.86	($0.13)	($0.05)
1996	($0.14)	($0.39)	($0.25)	$4.46	$4.69	$0.23	($0.02)
1997	($0.35)	($0.32)	$0.04	$3.31	$3.52	$0.22	$0.26
1998	($0.56)	($0.61)	($0.05)	$2.83	$3.11	$0.28	$0.23
2000	($0.50)	($0.35)	$0.15	$3.16	$3.31	$0.15	$0.30
2001	($0.18)	($0.14)	$0.04	$2.85	$2.83	($0.02)	$0.02
2002	($0.14)	($0.09)	$0.05	$3.85	$4.48	$0.63	$0.68
Avg.	($0.38)	($0.28)	$0.10	$3.46	$3.53	$0.07	$0.17

▫ *Years not available: 1977, 1979, 1985, 1988, 1989, 1999*