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The Pricing Performance of Market Advisory Services in Hogs Over 1995-2004

by

Ricky L. Webber, Ryan M. Batts, Scott H. Irwin,
and Darrel L. Good

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DISCLAIMER

The advisory service marketing recommendations used in this research represent the best efforts of the AgMAS Project staff to accurately and fairly interpret the information made available by each advisory service. In cases where a recommendation is vague or unclear, some judgment is exercised as to whether or not to include that particular recommendation or how to implement the recommendation. Given that some recommendations are subject to interpretation, the possibility is acknowledged that the AgMAS track record of recommendations for a given program may differ from that stated by the advisory service, or from that recorded by another subscriber. In addition, the net advisory prices presented in this report may differ substantially from those computed by an advisory service or another subscriber due to differences in marketing assumptions.

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The Pricing Performance of Market Advisory Services in Hogs Over 1995-2004

Abstract

This report was developed to evaluate the pricing performance of market advisory services in hogs over the 1995-2004 marketing years. Market advisory service performance and predictability of performance are measured. A minimum of eleven advisory programs were tracked each year over 1995-2004. The AgMAS Project subscribes to each of the services that are included and records recommendations in real-time, eliminating any hindsight bias.

Some explicit assumptions are made in order to produce consistent and comparable results across advisory programs. The assumptions are used to accurately depict marketing conditions faced by a representative Iowa/Minnesota hog producer. Some key assumptions are: i) the typical marketing window begins nine months prior to the beginning of the marketing quarter and ends at the end of the quarter (creating a twelve month window), ii) hogs are produced and sold on a consistent schedule, iii) producers do not face any production risk, iv) brokerage costs are subtracted for all futures and options transactions. Using these and other assumptions, the net price received by a producer following advice from a market advisory program is calculated for the 1995-2004 marketing years.

Three benchmarks are created to use in the performance evaluations. In this study, the first benchmark measures the average cash price offered during the marketing quarter. Another benchmark measures the average price offered over the entire marketing window, assuming an equal amount is sold each day. The final benchmark is based on the average marketing profiles of the advisory programs and hedges only 25% of production prior to the quarter.

The first indicator of market advisory program pricing performance is the proportion of program prices above the benchmarks. Results show that the advisory programs only beat the cash benchmark 34% of the time. They received a higher price than the index benchmark 62% of the time and the empirical benchmark 52% of the time. The second indicator examines the average price performance of the advisory programs. None of the programs had a significantly higher average price than the cash or the empirical benchmark. Only one program had a significantly higher average price than the index benchmark. The third indicator examines risk versus return of the programs. One program dominated the cash benchmark in terms of both risk and return. None of the programs dominated the index benchmark, while two programs dominated the empirical benchmark. Finally, predictability of program performance is examined. Several tests indicate a very limited amount of predictability.

Based on the results of this study, market advisory program performance in hogs is not significantly superior to the benchmarks. Performance was especially low when compared to the cash benchmark. Additionally, performance was even weaker when risk was included in the analysis.

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The Pricing Performance of Market Advisory Services in Hogs Over 1995-2004

Introduction

Hog producers, like crop and other livestock producers, view management of price volatility as an important aspect of their business. Patrick et al., (2007) found that price variability is often rated as one of the highest sources for income variability. The same study also found that even as vertical integration and contract feeding have become more prevalent, the cash market is still widely used. Many producers have turned to market advisory services to help manage this price risk. These services provide specific recommendations, for a fee, to producers as to when and how to price their hogs.

Even as these services become more widely used by producers (e.g., Patrick and Ullerich, 1996; Patrick, Musser, and Eckman, 1998; Schroeder et al., 1998; Norvell and Latz, 1999; Pennings et al., 2004), little research has been done to examine their performance in the livestock markets. The majority of market advisory service performance analysis has been done on the grain markets (Irwin et al., 2006; Batts, Irwin, and Good, 2009). These studies have found very limited ability of market advisory services to "beat" the market in grains. Evidence does suggest that market advisory services may outperform farmers, at least in corn and soybeans. Webber (2003) analyzed market advisory service performance in hogs from 1995 to 2001 and found that they did not tend to beat the market. Marketing performance in livestock is much different than with grains due to the lack of storability and constant production throughout the year. This would seem to indicate that different marketing strategies may be necessary for livestock as compared to grains.

Market Advisory Service Recommendations

The sample of market advisory services included in this report is not comprised of the population of services available for use by farmers. Also, these services do not represent a random sample of market advisory services. It is not possible to assemble a population of services, or in turn a random sample of services as a complete list of services does not exist. Additionally, a widely accepted definition of agricultural market advisory services is not available.

In order to perform this evaluation, five criteria were developed by the AgMAS Project staff to assemble the list of services to include. First, recommendations must be available electronically in "real-time". This allows for all subscribers to receive recommendations at the same time when they are intended to be implemented. Delivery methods include: satellite-delivered pages, Internet web pages, or e-mail messages.

Second, marketing recommendations must be made to hog producers. Speculative advice may also be given, but must be distinguishable from hedging advice. However, no attempt has been made to distinguish "speculative" use of futures and options versus "hedging" use of futures and options within a hedging service.

The third criteria states that recommendations must be in a form that may be used by a representative hog producer. Recommendations must state the percentage of production for a given period of time to be hedged. Additionally, futures and/or options prices and the date on which it should be implemented must be included.

The fourth criterion is that market advisory service recommendations must be "one-size fits all." It is not possible to track services that provide "customized advice for individual clients.

The fifth criterion states that a service must be a viable, commercial entity. Recently, the low cost and ease of distribution of information through the Internet or e-mail has made this much more of an issue. It is possible for an individual with little or no actual experience and no paying subscribers to start a "market advisory service." Firms that are not viable commercial concerns need to be excluded; however, newer and smaller advisory services should not be excluded from this study.

In the summer of 1994, the original sample of market advisory services was assemble from the list of Premium Services maintained by two major agricultural satellite networks, Data Transmission Network (DTN) and FarmDayta. The two networks merged in 1996. This list was not exhaustive; however, it did meet a market test in that the services were those in highest demand by producers. The list was also cross-checked with other farm publications to confirm that widely followed services were included in the sample. It seems reasonable to assume that the list of services is representative of the majority of advisory services available to producers.

A total of fifteen services have been included over the ten years between 1995 and 2004. Services have been added and removed over time. There are fewer programs tracked for hogs than were tracked in the previous AgMAS reports in grains because many programs do not provide livestock hedging advice. Additions have been due primarily to the increasing availability of market advisory services through electronic delivery. Services have been removed over time for multiple reasons. The majority of removed services have been deleted either because they have stopped giving recommendations for the particular commodity or the service has gone out of business. Table 1 presents a list of the advisory programs followed over the study period as well as reasons for adding and removing programs from the sample. Figure 1 shows the distribution of track record lengths for all 15 programs followed in the AgMAS study for hogs. From this point on, the term "advisory program" will be used because an advisory service may have multiple marketing programs.

Unlike the market advisory service analysis in the grains, only the futures and options hedging advice are followed. One reason for this is that hogs cannot be held for a great length of time, due to the non-storable nature of production. Another reason is that many market advisory programs do not provide cash marketing recommendations. Programs that provide only cash recommendations are not followed. However, programs that give cash recommendations in addition to futures and options recommendations are included, but cash recommendations are ignored.

Three types of survivorship bias may arise as potential problems when assembling an advisory program database. Survival bias may significantly bias measures of performance

upwards since “survivors” typically perform better than “non-survivors” (e.g., Brown et al., 1992; Schneeweis, McCarthy, and Spurgin, 1996; Brown, Goetzmann, and Ibbotson, 1999). Including only advisory programs that remain in business at the end of a given sample period leads to the first and most direct form of survivorship bias. The AgMAS database should not be affected by this type of bias because all programs that have been tracked over the entire time period of the study are included in the sample. The next form of survivorship bias occurs if discontinued advisory programs are deleted from the sample for the year in which they were discontinued. This is a form of survivorship bias due to the fact that only survivors for the entire marketing year are tracked. Since advisory programs that are discontinued during a marketing year are included for that marketing year, the AgMAS database should not be affected by this type of bias. The third type of survivorship bias occurs when data from prior periods are “back-filled” when an advisory program is added to the database. This is a form of survivorship bias since data from surviving advisory programs are back-filled. Again, this bias should not appear in the AgMAS database because recommendations are not back-filled when an advisory program is added. Recommendations are only collected for the marketing year after a decision has been made to add an advisory program to the database.

Another type of bias, hindsight bias, can create another potential problem when assembling a database of advisory program recommendations (e.g., Jaffe and Mahoney, 1999). This type of bias occurs when only profitable recommendations are included. The AgMAS project should eliminate this type of bias as all services are subscribed to and all recommendations are recorded in real-time. Some advisory programs provide multiple updates daily; all of these recommendations are also recorded in real-time.

As recommendations are recorded, special attention must be paid to which marketing quarter’s production is to be hedged, the amount to be sold, which futures and/or options contract is to be used, and any price targets to be used. If price targets are to be used, the recommendation is noted and is recorded if the target price is hit. Otherwise, it is dropped when the order is cancelled or the contract expires.

Recorded recommendations are thoroughly checked for accuracy and completeness. The AgMAS track records are checked, whenever possible, against status reports provided by the advisory program. At the end of each marketing quarter, each program is checked to make sure that spot sales total 100%, all futures positions have been offset, and all options are either offset or expired.

The AgMAS Project staff use their best efforts to accurately interpret information given by each market advisory program in order to assemble a final set of recommendations for each program. In some cases, judgments must be made as to whether or not to include a particular recommendation when it is unclear. This occurs in cases where a program has made a suggestive recommendation, such as “a producer might consider”. It is possible that the AgMAS track record for a given program may differ from that stated by the advisory program or from that recorded by another subscriber due to differing interpretations.

Net Advisory Price Computations

The same procedure used by Webber (2003) will be used here to compute net hog prices for each advisory program. Advisory service recommendations are collected daily on a "real-time" basis by the AgMAS (Agricultural Marketing and Advisory Service) Project at the University of Illinois at Urbana-Champaign. The recommendations are assembled in chronological order for each of the advisory programs and put into a spreadsheet designed for each program. The recommendations include the date that the position was entered, futures or options price, and percent hedged. Each recommendation is recorded for the marketing quarter to which it refers.

At the completion of each marketing quarter, when all hedges have been offset or expired, the net price that a producer precisely following the program's recommendations would have received is computed. The same cash marketing strategy is used for all programs. This means that the net advisory price is computed as the quarterly average cash price plus/minus hedging gains/losses minus brokerage costs. Comparisons will be made to three types of benchmarks: a quarterly average cash price, an index benchmark in which an equal amount is priced each day of the marketing window (75% hedged prior to the quarter), and an empirical benchmark in which the amount hedged prior to the start of the marketing quarter is based on the marketing profiles of the programs (25% hedged prior to the quarter).

Some assumptions must be made in order to make the results consistent and comparable across the different advisory programs. The first assumption is that hog producers are on a consistent production schedule, so they receive the average cash price for their cash sales. Second, lumpiness in trading futures contracts is not an issue. Third, producers do not face any production risk and are able to fill their contracts. And finally, when recommendations to lift hedges as cash hogs are sold, the hedges are lifted on the Wednesday nearest to the 15th of the month.

Geographic Location

This analysis is set up to represent an Iowa/Minnesota hog producer. This area allows for the use of the Iowa/Minnesota cash hog price published by the Agricultural Marketing Service (AMS) of the USDA. This cash price series represents a large production area and is widely followed. Also, the majority of the formula priced transactions by 12 leading pork packers are based on the Iowa/Minnesota spot market (Schroeder and Ward, 2000). This price series covers a highly concentrated hog production area.

Marketing Window

The "marketing window", or "decision horizon", is defined as the time period in which a producer normally makes pricing decisions. The marketing window may not necessarily equal the time of observed market activity. This is because not taking action (e.g., not hedging) is a type of decision that may be made during the marketing window.

For this analysis, a marketing window for a representative hog producer who subscribes to the advisory programs tracked by the AgMAS Project is needed. The conceptual framework

for the marketing window was provided by Good, Heironymus, and Hinton (1980), although their research was on grains. They stated that a marketing window begins at initial production planning time and extends until the end of the storage season. For livestock, there is no storage season. The end of the marketing window is when all hogs have been marketed, when cash sales are at 100%. Production planning begins when hogs are bred, which is typically nine months prior to the beginning of the marketing quarter. This means that the marketing year begins nine months prior to the start of the quarter and ends when all hogs have been marketed for that quarter, covering one year.

Exception may arise to the exact marketing window. The marketing window defined for this research represents the "typical" marketing window. It is assumed that a hog producer would be somewhat flexible with the actual marketing window, especially in the case of recommendations that are not very far outside of the defined marketing window. Most commonly this occurs when a hedge continues past the end of the marketing window because some contracts are used to hedge multiple quarter's production. If a specific recommendation to lift the hedges upon cash sale is not given, then the hedges are lifted when a recommendation is given or upon contract expiration, whichever occurs first.

Cash Marketing Strategy and Quantity Sold

Production for each quarter is assumed to be on a 100 point basis or one hundred-weight (cwt.). An order to hedge 25% of production for a given quarter would be 25 pounds or 0.25 hundred-weight. This makes any gains/losses from futures/options transactions comparable to the spot cash prices.

Beginning in February 1997, adjustments must be made to advisory program recommendations because futures changed from a live hog price to a carcass price. Advisory program recommendations are based on live weight. When hedging in carcass weight contracts, the hedging percentage must be stated based on carcass weight, so the producer does not over-hedge. In this analysis, the hedge percentage is adjusted using a 0.74 carcass to live weight factor. So, an order to hedge 20% would be multiplied by the 0.74, to get the amount to hedge in carcass weight contracts, 14.8%.

Lumpiness of futures contracts is assumed not to be an issue in this study. The recommended amount is what is hedged. Also, a constant production schedule is assumed. This assures that the representative producer receives the quarterly average spot cash price.

Recommendations to "lift hedges as cash hogs are sold" are given by some advisory programs. When such a recommendation is given it is assumed that the hedge will be lifted on the Wednesday closest to the 15th of the month that the hedge targets. Since a representative hog producer markets hogs continuously throughout the quarter, it must be determined when to lift this type of hedge. For example, if an advisory program says to "hedge 50% of first quarter 2004 production with the April contract, lifting the hedges as cash hogs are sold," then 1/3 of the hedge would be lifted on the Wednesday closest to the 15th of January, February, and March.

No production risk has been factored in to the net advisory price calculations. The representative hog producer's production is assumed to be known over a given quarter.

Production risk is much lower for hogs than grains. The production risk due to death loss and changes in rates of gain tend to be small.

Prices

Iowa/Minnesota carcass prices are used in this report since a consistent live-weight cash price series is not available for the entire time period. The carcass prices used are collected from the Kansas State University livestock marketing web page (www.agecon.ksu.edu/livestock). The carcass prices are converted to live-weight prices for each of the 40 quarters in this study. The carcass price is the quarterly average carcass price for barrows and gilts each Wednesday during the marketing quarter.

Fill prices for futures and options transactions are the prices reported by the advisory programs, unless a price is not given. When a fill price is not given, the settlement price reported by the Chicago Mercantile Exchange (CME) from barchart.com is used. Using these prices does not take liquidity costs into consideration in executing futures and options transactions. Liquidity costs are incurred by non-floor traders who must buy at the ask price and sell at the bid price. The difference between these two prices, the bid-ask spread, is earned by the floor traders for "making the market".

As noted previously, CME hog futures and options contract specifications changed in February 1997. Live hog futures contracts were used prior to February 1997 and carcass weight futures contracts were used afterwards. Hog futures and options contracts are traded for: February, March, May, June, July, August, October, and December.

Brokerage Costs

Brokerage costs for futures transactions are assumed to be $50 per round-turn. Brokerage costs are assumed to be $30 to enter and exit options positions. It is also assumed that CME Live/Lean hog futures and options are used, which have a contract size of 40,000 pounds or 400 cwt. This means that it costs $0.125/cwt per round-turn on futures transactions and $0.075/cwt to enter and exit options transactions.

Summary

This section sets forth the steps and information used to compute an advisory program's net price for hogs. First, the AgMAS project staff collects recommendations from the advisory programs deemed to provide clear and concise recommendations, through satellite-delivered pages, Internet web pages, or e-mail messages. Five criteria were used to define a market advisory service.

At the completion of a marketing quarter, when all of the recommendations for an advisory program have been collected, their net advisory price is calculated. Lumpiness of contracts and producer production risk were addressed. Spot cash sale recommendations were not followed in this study for two reasons: hogs cannot be held for a great length of time and very few advisory programs give specific cash hog recommendations.

A representative hog producer for this study is assumed to use the Iowa/Minnesota spot hog market. The marketing window begins when a producer starts making production planning decisions. The marketing window begins at breeding, nine months prior to the marketing quarter, and ends when cash hogs are marketed at the end of the quarter (covering twelve months).

Cash prices used are the Iowa/Minnesota adjusted spot hog price, which is derived from the Iowa/Minnesota carcass price. This price series is used as no consistent series exists for live-weight prices. Live-weight spot prices are adjusted from the carcass prices for the 40-quarter time period. Both live and lean hog price futures contracts are used as the CME switched from live to lean-weight contracts during this study. Net advisory prices are the average cash prices plus/minus hedging profits/losses.

Marketing Behavior of Advisory Services

Prior to presenting pricing performance results, advisory program marketing behavior will be examined. It is possible that two advisory programs may receive the same net price, but do so in two very different manners. The differences in the way the two services received the same net price may be caused by: the use of different pricing tools (i.e., futures, options, or the combination of the two), the timing of the hedges, and the frequency of hedging transactions.

Differences in marketing behavior of advisory programs are shown in two ways. First, a description of the hedging tools used by the advisory programs is presented, including the type of pricing tool and frequency of transactions. Second, a daily index of the net amount sold by each advisory program is created. This type of index requires that futures and options transactions and cash sales be weighted, in this case by the "deltas" of the individual positions. The marketing "profile" is created by plotting the daily values of the index for the entire marketing period. Marketing profiles provide a summary of the magnitude of hedging by individual market advisory programs throughout the marketing period.

Marketing Tools

The frequency of futures and options usage by advisory programs in marketing hogs from 1995 through 2004 is presented in this section. First, the potential positions that advisory programs could use are divided into four categories: futures only, options only, a combination of futures and options, and no futures or options. Next, counts of the number of quarters in which an advisory program used each of the four positions are made. In order for an advisory program to be counted in a quarter for the combination of futures and options category, the program must have made at least one futures position and at least on options position, not necessarily at the same time, during the marketing window for that quarter. As long as one futures position and one options position is taken during the marketing window, the program is counted as using both.

The frequency counts for individual programs are presented in Table 2. Advisory programs with less than one year of data are omitted due to concerns about using a small data set. The table indicates that futures only positions are the most frequently used marketing tool, used in an average of 52.2% of the marketing quarters. All of the programs used futures only

positions in at least one marketing quarter. Ag Profit by Hjort used futures only positions most frequently, at 87.5% of the marketing quarters. Progressive Ag used futures only positions the least, at 8.3% of the marketing quarters. The majority of futures only hedges are short hedges. Options only positions are not used nearly as frequently as the futures only hedges, with an average of 8.2% of the quarters. Four programs never used the options only method. Ag Resource used the options only positions the most, at 40% of the quarters. Combination use of futures and options is used more frequently than options only positions. Two programs never used the combination method. Combination of futures and options are used somewhat frequently by a few of the services, with Stewart Peterson using this tool 50% of the time. The no futures or options position method was used infrequently, with one service never having a quarter without a futures and/or options hedge.

The frequency of the use of the marketing tools by individual marketing quarters for all marketing programs followed in that quarter (except for those tracked for less than one year) is presented in Tables 3 and 4, in count and percentage form respectively. No patterns of overall use of these marketing tools seem apparent over time. However, especially during 1998, there does appear to be a correlation between the use of the marketing tools and hog prices. During the first 2 quarters 33% of the programs had no futures or options hedges. However by the fourth quarter, when prices had bottomed, all programs had a hedge in futures and/or options. The 1st quarter of 1996 had the highest use of futures only hedges, at 82%. The highest use of options only hedges occurred in the 3rd quarter of 1998, at 33%. The highest use of combination hedges occurred in the 2nd and 3rd quarters of 1997, at 50%. The 3rd quarter of 2002 and the 1st quarter of 2003 had the highest percentage of programs with no hedges used, at 55%.

Constructing Marketing Profiles

The widespread recommendation to hedge with futures and/or options by market advisory programs has been shown. The timing of these hedges is also something that needs to be examined. To do this, the net amount sold by each advisory program is calculated daily. The hedges and cash sales must be weighted in order to construct this daily index of sales. In this study the weights are the "deltas" of the individual positions. This is because a weighted-average of the price exposures of the individual positions is the price exposure of the portfolio (e.g., Hull, 1997). A daily delta-weighted index is computed for each advisory program for each quarter that it is tracked. The marketing "profile" is created by plotting the daily values of the indexes.

Computing Delta

In order to calculate the net amount sold by each market advisory program, a weighting process is needed. In this case the weight placed on each position is defined as delta. Delta is defined as the dollar amount that the value of the position changes for each dollar in price that the underlying commodity changes. Delta is only valid for "small" price changes near the current price.

Normally deltas are computed assuming a positive change in the underlying price. However, the delta must be changed when marketing profiles are produced for someone facing downside price risk, as is the case for hog producers. Short futures positions are often

considered to have a delta of -1. For a hog producer, this short position eliminates downside risk, ignoring basis risk. This means that one hundred pounds sold short using a futures contract removes price risk for one hundred pounds. In this case it would be appropriate to reverse the typical sign placed on delta, placing a +1 delta on short futures positions. This would be more appropriate from a hog producer's perspective. Spot cash sales would also have a delta of +1. Long futures, which would typically have a delta of +1, would have a delta of -1 because they add to downside price risk.

Options positions present a much different situation. In the case of an options position, the underlying position is the futures contract. As a hedger, an options position that represents a future intention to sell the underlying commodity (long put or short call) would have a positive delta value. On the other hand, an options position that represents the future acquisition of the underlying commodity (short put or long call) would have a negative delta value. The exact delta value depends on the relationship between several factors: the option's strike price, the underlying futures price, the time-to-expiration, and whether the option is a short or long position. For example, assume the current futures price for lean hogs is $50/cwt. and that a long put is purchased with a strike price of $49/cwt. and a premium $1/cwt. If the futures price goes down $1.00/cwt., the option's premium will increase by less then $1.00/cwt. to reflect the uncertainty about whether the option will remain in-the-money through expiration. Unlike spot cash sales and futures contracts, the delta on options positions change daily as underlying futures, price uncertainty, and the time-to-expiration change. Delta values for long puts and short calls range between 0 and +1, while delta values for short puts and long calls range between 0 and -1.

Options deltas must be calculated each day for each options position that a market advisory program has in place. Computation of the theoretical option value is the first step in computing options deltas (Bertoli et al., 1999). As with previous academic studies and standard practices of options traders (e.g., Natenberg, 1994), Black's model is used,

$$(6)\ C = Ue^{-rt}N(h) - Ee^{-rt}N(h - v\sqrt{t})$$

$$(7)\ P = -Ue^{-rt}N(-h) + Ee^{-rt}N(v\sqrt{t} - h)$$

where $h = \frac{\ln(U/E)}{v\sqrt{t}} + \frac{v\sqrt{t}}{2}$, C is the theoretical value of a call, P is the theoretical value of a put, U is the value of the underlying futures contract, E is the option's exercise price, t is the time to expiration as proportion of a year, r is the annual risk free interest rate, e is the exponential function, ln is the natural logarithm function, and $N(x)$ is the cumulative normal density function. The FINCAD financial software package is used for the calculations.

Options data (exercise price, time-to-expiration, and premium) are collected from www.barchart.com and The Institute for Financial Markets. The risk free interest rate is the secondary market daily three-month Treasury bill rate quoted from the Federal Reserve. The volatility input is the estimated implied volatility calculated daily for the option. This estimate should give an accurate estimate of the "true" option delta.

The option delta is calculated by differentiating the call or put formula by the underlying futures price. Therefore, the formula used for deriving put and call deltas is,

$$(8)\ \Delta_c = \delta C / \delta U = N(h)$$

$$(9)\ \Delta_p = \delta P / \delta U = -N(-h)$$

where Δ_c stands for the delta of a call and Δ_p is the delta of a put. Since the underlying futures price, time-to-expiration, and implied volatility change daily, deltas are re-computed daily for the relevant option.

Net Amount Sold

Due to the switch from live weight to lean weight contracts, two different methods are used to compute the net amount sold. Prior to the first quarter or 1997, the net amount sold is expressed on a 100% scale. Beginning with the first quarter of 1997, the net amount sold is expressed on a 74% scale. In order to compare between the two time periods, the net amount sold beginning in the first quarter of 1997 must be adjusted to a 100% scale.

Prior to the first quarter of 1997, the net amount sold across all recommended daily positions can be calculated as (e.g., Hull, p. 320, 1997),

$$(10)\ \Delta_t = \sum_{i=1}^{m} w_{it}\Delta_{it}$$

where Δ_t is the net amount sold aggregated across the m marketing positions open on date t, prior to 1997 first quarter, expressed as a percentage of actual production, ω_{it} is the percentage sold using position i as of date t and Δ_{it} is the delta position of i as of time t. It is useful to think of the net amount sold as the net hedge ratio of the advisory program on date t for the marketing quarter.

It is important to note that due to the changes associated with using the lean hog contact, 74% is the total amount of sales that an advisory program can have starting with first quarter of 1997. No adjustments would have to be made if the futures and options prices were adjusted instead of the percentages. But since the conversion is made with respect to percentages and not prices, there is a scaling adjustment back to 100% so that the marketing profiles are comparable to those before the first quarter of 1997. The net amount sold is adjusted using the following formula,

$$(11)\ \Delta_t = \frac{\left(\sum_{i=m+1}^{n} w_{it}\Delta_{it}\right)*100}{74}$$

where positions opened after first quarter of 1997 are m+1 through n.

Spot cash sales are made daily for every advisory program's marketing profile during the marketing quarter. So if there are 64 business days in a given marketing quarter, 1/64 of sales are made each business day during that quarter. Spot cash sales equal 100% on the last day of the marketing quarter. After the first quarter of 1997 the percentage of cash sales would be equal

to 74% so that the percentage is consistent with the carcass percentages that are used in hedging. They could then be re-weighted to 100% using equation (11).

An example follows of how to calculate the net amount sold for an advisory program in hogs. Suppose that a market advisory program recommends hedging 20% of production for the first quarter of 1997. Since the recommendation is using the new lean hog contract, the percentage was adjusted to account for the use of lean hog futures contract, which is 14.8% (20%*0.74). When computing the net amount sold for this program, the weights have to be adjusted to obtain the actual amount that the service recommends to hedge. Using equation (11), the net amount sold was 20% (i.e., (1*0.148)*100/74)*100).

Next, assume that the program recommends using a long call equal to 35% of first quarter of 1997 production and that the delta on that day is at -0.42. The 35% is actually only 25.9% (35*0.74) when using the lean hog option contract and the negative sign on the delta implies that the position involves buying, not selling, of the underlying commodity, and 0.42 implies that the option will change 42 cents for each dollar change in the underlying futures contract. The net amount sold is now only 5.3% (i.e., 20+((-0.42*0.259*100/74)*100)). If the option moves out-of-the-money, the net amount sold would increase towards 20%, because it would be less likely that the option would be worth anything the closer it was to expiration. If instead the option went in-the-money, the net position would decrease. It the option went deep in-the-money and it was close to expiration the delta would approach -1, and the net amount sold would approach -15% (i.e., 20+((-1*0.259*100/74)*100)). In this case the option position would essentially be equivalent to a long position in the underlying futures.

Marketing Profiles

Following the assumptions about the marketing window, marketing profiles begin nine months prior to the first day of the marketing quarter. Marketing profiles present the cumulative positions of a program over a marketing quarter. Marketing profiles show net advisory positions for each day during the marketing window, representing all of the positions in place at a given time. Marketing profiles graphically demonstrate the amount of pricing by an advisory program for a given quarter.

The average net amount sold across years for a given quarter can be computed by combining the individual market program quarters. For example, by combining all of the first quarter net amounts sold for an individual advisory program, the first quarter average marketing profile can be derived. Dates for the marketing quarters are aligned in order to calculate the average on a specific date. Average marketing profiles can be used to determine if any patterns in hedging appear over time for each program.

In order to examine the average net amount sold over a given quarter, all programs for the marketing quarter can be combined over all years. For example, the first quarter average marketing profile consists of all first quarters for all programs. This is repeated to determine the average marketing profile for the second through fourth quarters. In addition to the average marketing profile, the minimum and maximum amount sold are computed for each quarter and graphed. This provides some insight as to how the industry typically markets hogs each quarter.

Figures 3 through 17 graphically present the quarterly average marketing profiles for each market advisory program. The marketing profiles for Grainfield Report, North American Ag, and Prosperous Farmer are the actual profiles for each quarter because they were only tracked for one marketing year. For some advisory programs, the average net amount sold does not equal 100% because they have open positions following the last day of the marketing quarter. This is normally not the case as most programs are close to 100% sold on the last day of the marketing quarter.

Typically, the range of the scale on the profiles ranges from zero to 150%. 100% indicates that the entire hog production for the marketing quarter is sold. Anything above 100% represents "over-hedging". Negative net amounts sold represent a net long "hedging" position. Some programs are net long, while others are over-hedged at some time during the quarter. For example, Ag Resource is net long for extended periods in the first and fourth quarters (Panels A and D, Figure 6) and Stewart-Peterson is over-hedged (Figure 15). Most advisory programs seem to do the majority of their hedging during the marketing window. This can be seen as very little hedging is done at the beginning of the window and most programs are near 100% sold at the end of the window. No seasonal hedging patterns are apparent.

By combining all marketing quarters for each advisory program, hedging at specific points in time can be examined. Table 5 presents the average hedge percentages for each advisory program 9-months, 6-months, 3-months, and the day prior to the beginning of the marketing quarter. A few services had no hedges in place 9-months prior to the beginning of the marketing quarter, while Ag Profit by Hjort had the most hogs hedged (6.2%). Hedging percentages 9-months prior to the marketing quarter ranged from zero to 75%. Six months prior to the beginning of the marketing quarter, hedging begins to increase. Ag Review still had no hedges in place, while Ag Profit by Hjort averaged 12.5% hedged. The amount hedged ranged from zero to 100%. The average hedge percentage 3-months prior to the beginning of the quarter ranged from 3.1% for Ag Review to 22% for Brock. Three months prior to the start of the quarter, the minimum amount hedged was -50% and the maximum amount was 100.6%. By the day prior to the start of the quarter, Progressive Ag averaged only 12.1% hedged, while AgLine by Doane was 27.4% hedged. Programs had anywhere from -100% to 110% hedged going into the marketing quarter.

All advisory programs are combined for each marketing quarter and presented in Figure 18. These "typical" marketing profiles also show the low amount of hedging prior to the beginning of the marketing quarter. Both Figure 18 and Table 5 show that some individual programs may be hedged much more heavily than the average.

Summary

This examination of the frequency and magnitude of the use of the various marketing tools by the market advisory programs should prove to be useful in combination with the examination of their performance. Advisory programs have at their disposal futures, options, futures and options, or no futures or options positions as tools available to use in their marketing programs. Futures only positions were most commonly used, followed by the combination use of futures and options. The use of no futures or options positions was also common, while the use of options only was limited.

Marketing profiles were developed to examine the magnitude of hedging by the market advisory programs throughout each quarter. A daily index of the amount sold was calculated using "deltas" as the weight for each hedge and cash position. This index is plotted for the entire marketing quarter creating the marketing "profile". Hedging varied widely across programs and quarters, with over-hedging occurring often. In addition, long positions were used often. Typically, the amount hedged was between zero and 150%. Very little production was hedged 9-months prior to the start of the marketing quarter (2.3%), while 20.1% was hedged by the day prior to the start of the marketing quarter.

Benchmarks

It is necessary to have a measure to evaluate advisory program performance against. In this study, three types of benchmarks will be used for this purpose: a spot cash benchmark, an index benchmark, and an empirical benchmark. This is similar to the use of market indexes such as the Dow Jones Industrial Average or the S&P 500 in the financial markets.

Comparison of pricing performance between advisory programs can indicate the relative performance of the programs, but provides no evidence of the performance in an absolute economic sense. Irwin et al. (2006) provide a detailed explanation of benchmark specification that will be incorporated for hogs. The concept underlying performance evaluation of market advisory programs is fairly simple: the comparison of the net price generated by advisory programs with prices that could have been obtained by a producer through appropriate alternative strategies (Sharpe, Alexander, and Bailey, 1999, p. 829). The alternative strategies that are used for comparison are referred to as benchmarks because they serve as objective standards of performance.

The theory of efficient markets is important to consider when examining benchmarks. This theory makes the assumption that market participants are rational and no arbitrage opportunities are available. In the strongest form, efficient market theory predicts that market prices fully reflect all public and private information (Fama, 1970). This implies that no trading strategy can outperform the market. In this case the return offered by the market would be the relevant benchmark. In this study, such a benchmark should represent the average price offered by the hog market over the marketing quarter. This average price is computed as though an equal amount of production is sold each day during the marketing quarter, representing a naïve, no-information strategy. Efficient market theory suggests that this benchmark will be equal to the market advisory service price, on average.

Another benchmark represents selling an equal amount of production each day of the entire marketing window for a given quarter. This would be accomplished by hedging with futures until the beginning of the marketing quarter, which is 75% of the marketing window. During the marketing quarter, the hedges are lifted and cash hogs are sold.

The marketing profiles indicated that the amount hedged by the beginning of the marketing quarter is lower than 75%. Another benchmark could take this information into consideration. This third benchmark would be based on the marketing profiles and have less than 75% hedged going into the marketing quarter.

There are some additional characteristics of a good benchmark: i) they should be somewhat easy to calculate and understand, ii) they should represent the returns to a marketing strategy that can be implemented by producers, and iii) they should be directly comparable to the net advisory prices (Irwin et al., 2006).

Cash Benchmark

The cash benchmark represents selling an equal amount of production each day during the marketing quarter by making a spot cash sale. By doing this, assuming a producer is on a constant production schedule, the price received for the quarter will be equal to the quarterly average spot cash price. The spot cash price used in this study is the Iowa/Minnesota adjusted spot cash price. This first benchmark is simply the average spot cash price for the quarter based on the Iowa/Minnesota adjusted spot cash price.

A consistent set of live weight cash prices are not available for the entire study time period, so the Iowa/Minnesota carcass price series, reported on the Kansas State University livestock website, is used for the benchmark. The average quarterly carcass price is computed as the average of the Iowa/Minnesota carcass prices reported every Wednesday during the marketing quarter. The Iowa/Minnesota carcass price is adjusted by 0.74 to create the adjusted spot cash price for each quarter. This process is used for all 40 quarters in this study to convert the carcass prices to live weight prices. For example, to obtain the adjusted price for a carcass price of $70.00/cwt., it is multiplied by 0.74, which would be an adjusted price of $51.80/cwt.

As previously noted, this spot cash benchmark is used as the cash price for the advisory programs. This is because it was assumed that the representative producer sold cash hogs on the spot market equally throughout the quarter. Futures and options gains/losses and brokerage costs are added to the adjusted spot cash price to calculate the net advisory program price. This means that the only differences between the benchmark price and an advisory program's price are the futures/options gains/losses and brokerage costs.

Alternative Benchmarks

In addition to the cash benchmark, two alternative benchmarks were created. The first alternative benchmark is an index benchmark, in which an equal amount of hogs are sold each day during the marketing window. The second takes into account actual hedging use from the marketing profiles to create an empirical benchmark, hedging 25% in futures prior to the start of the quarter. These benchmarks can be directly compared to net advisory prices and the cash benchmark.

An issue arises in examining hog prices and marketing performance, the theory of normal backwardation. According to this theory, the current futures price is less than the expected future spot price and over time the futures price will rise to become equal to the expected future spot price at expiration. Several studies have examined this theory in grains with mixed results (e.g., Carter, Rausser, and Schmitz, 1983; Raynauld and Tessier, 1984). Kolb (1992) examined normal backwardation and tried to apply it to a broader set of data. To determine if normal backwardation existed in the sample, Kolb tested for three relationships. First, he tested for

positive returns from long futures positions. Second, it was determined whether futures prices prior to expiration were lower than terminal futures prices. Third, futures prices were examined to determine if they were lower the longer the time until expiration. The sample data set used to test these relationships covered 1957-1988. Live hog futures results did return a positive profit for long positions. The second test indicated that live hog futures prices were lower than terminal prices 63% of the time. The third test also indicated that futures prices were lower then terminal prices. Kolb (1992) concluded that hog futures followed normal backwardation. Hartzmark (1987) used actual trading data to examine the issue of normal backwardation and concluded that there was no risk-premium and normal backwardation is false.

Results from studies of the theory of normal backwardation have been mixed. The existence of normal backwardation would cause a hog producer who hedges to typically receive a lower price than one who does not. The index and empirical benchmarks that include short hedging strategies simulate indexed positions and an average hedge position.

Index Benchmark

This second benchmark is based on an "index" approach to marketing in which an equal amount of production is priced daily over the marketing window. Sales made prior to the start of the marketing quarter are made using short futures positions. This would have a producer 75% hedged in futures on the day prior to the start of the marketing quarter, as 75% of the marketing window has passed. During the marketing quarter, cash sales are made daily so that the average quarterly cash price is received. The hedge positions are lifted monthly on the 15th. Hedging with futures gives the ability to not rely entirely on cash sales made during the marketing quarter as the relevant benchmark. As the marketing window covers 12-months, this benchmark is appropriate as it is based on the average price available over the 12-month window.

The index benchmark is relatively simple to calculate. First, a short hedge is made using the nine-month average futures price up to the day prior to the beginning of the marketing quarter for each contract used in the marketing quarter. One third of the position is lifted by buying back the futures contract on the Wednesday closest to the 15th of each month of the marketing quarter. Contracts nearest to expiration for a quarter are used except for futures expiration months, in which the next available contract is used. For example, first quarter hedges for January are made with the February contract, while February and March hedges use the April contract. Any gains/losses from these indexed positions are multiplied by 0.75 to create an indexed position and then added to the Iowa/Minnesota adjusted spot cash price. This process is used for all 40 marketing quarters.

An example of the calculation of the index benchmark for the first quarter of 1995 is presented in Table 6. The nearby futures contract for the nine months leading up to the first day of the marketing quarter is used to calculate the average futures selling price for the first quarter of 1995. Each quarter, the same methods are used except that different nearby contracts are used. January 1995 production is hedged using the February 1995 live hog contract. February and March hog production is hedged using the April 1995 live hog contract. The January hedges are offset on January 19, 1995 at a price of $40.60/cwt. The loss of $0.21/cwt is multiplied by 1/3 as the hedge only applies to 1/3 of the quarter's production. The same methods are used for the February and March hedges with the April contract. The total hedging loss of $0.04/cwt is

multiplied by 75% because the 9-month hedging window prior to the marketing quarter is 75% of the entire marketing window. The hedging losses are subtracted from the Iowa/Minnesota cash price of $38.73/cwt to arrive at an index benchmark of $38.70/cwt.

Beginning in the fourth quarter of 1996, adjustments are made when computing the index benchmark. The February 1997 lean hog contract was used to hedge both November and December production, so adjustments must be made to the indexed position. The indexed amount (75%) must be adjusted by multiplying by 0.74 to give an adjusted amount hedged of 55.5% for November and December hedging. The 75% based on live weight is equal to 55.5% based on carcass weight.

Empirical Benchmark

The third benchmark is similar to the second except that the amount hedged prior to the marketing quarter is adjusted based on the marketing profiles. The marketing profiles were examined and it was determined that the advisory programs tended to hedge nearly 25% prior to the start of the marketing quarter. So this benchmark will be almost identical to the index benchmark except that it has one-third as much hedged going into the marketing quarter. This addresses the question of what the average amount hedged by a producer following the average advisory program was when entering the marketing quarter, which was unknown prior to the calculation of the average marketing profiles. These hedge amounts were adjusted by 0.74 when the lean hog contracts were used.

Benchmark Comparisons

The quarterly prices for the cash, index, and empirical benchmarks are presented in Table 7. The results show only a $0.70 difference between the three benchmarks, on average, over 40 quarters. The average prices ranged from $42.40 for the index benchmark to $43.10 for the cash benchmark, with the empirical benchmark at $42.82. The standard deviation was highest for the cash benchmark at $9.10, with the index benchmark having the lowest standard deviation at $6.44. The empirical benchmark is closer than the index benchmark to the cash benchmark because it only had a small amount hedged going into each marketing quarter (25%). These results are similar to findings from previous studies of hedging in hog futures in which risk, as well as returns, are lower when incorporating hedging. This is consistent with normal backwardation.

The fourth quarter of 1998 provides an extreme example of the impact of hedging. As shown in Table 7, the Iowa/Minnesota adjusted spot cash price fell to $19.25/cwt, while the index benchmark was $28.92/cwt and the empirical benchmark was $22.47/cwt. This indicates a $9.67/cwt gain from the 75% hedge in the index benchmark and a $3.22/cwt gain from the 25% hedge in the empirical benchmark. The opposite can be seen when prices increase, such as in the third quarter of 1996. During the quarter, the average spot price was $58.01/cwt, while the index benchmark was $52.28/cwt and the empirical benchmark was $56.10/cwt. The lower index and empirical benchmark prices were caused by hedging losses. Additionally, the empirical benchmark always falls between the index and cash benchmark because the empirical benchmark hedges a smaller portion of production.

The three benchmarks can also be considered alternative strategies to the use of a market advisory program. The spot cash benchmark represents the average price that a producer would receive by selling an equal amount of production daily throughout the marketing quarter. The index benchmark is equal to what would be received by a producer who sells an equal amount of production during the marketing window, using futures prior to the marketing quarter. The empirical benchmark is identical to the index benchmark except that a smaller amount is hedged prior to the marketing quarter.

Summary

Benchmarks play an important role in the evaluation of market advisory program performance. The theory of efficient markets, which assumes that all market participants are rational and that no arbitrage possibilities exist, is a key concept. In this study, a market benchmark should measure the average price available to a hog producer over the marketing period.

Three benchmarks are used in this study: the spot cash benchmark, an index benchmark, and an empirical benchmark. The spot cash benchmark is the average quarterly Iowa/Minnesota carcass price adjusted to a spot cash price. The index benchmark is based on selling an equal amount of production over the entire marketing window, which begins 9-months prior to the quarter, using futures hedges prior to the marketing quarter when spot cash prices are used. In this benchmark, the producer is 75% hedged on the day prior to the start of the marketing quarter. Cash sales are then made daily, while lifting hedges. The empirical benchmark is very similar except that only 25% of production is hedged prior to the marketing quarter. The market advisory program profile results indicated that producers do not hedge a large portion of their production prior to the marketing quarter. The profiles indicated that, on average, around 20 to 25% of production was hedged before the quarter. Hedges were lifted and cash sales were made just as they were with the index benchmark.

The average prices for the benchmarks varied only slightly over the ten years covered. There was a much greater difference in the risk (standard deviation) between the benchmarks. Risk was lower for the two benchmarks using futures hedges prior to the marketing quarter; and decreased as more production was hedged. The standard deviation of the index benchmark is $2.66/cwt. lower than the cash benchmark and $1.69/cwt. lower than the empirical benchmark. However, returns were also lower for the two benchmarks that used futures hedging. The average price of the index benchmark was $0.70/cwt. lower than the cash benchmark and $0.42/cwt. lower than the empirical benchmark.

Performance Evaluation of Services

Four performance measures are evaluated for market advisory program net prices for the first quarter of 1995 through the fourth quarter of 2004. The first indicator examines directional performance by determining the proportion of advisory programs that beat the benchmarks. Second, average price performance is presented by examining the difference between the average price of the advisory programs and the benchmarks. Third, E-V analysis is conducted by examining the average price and risk of the advisory programs relative to the average price and risk of the benchmarks. Finally, predictability of advisory program performance is analyzed.

Net Advisory Prices and Benchmarks

Details of the composition of each quarter's net advisory prices are found in Appendices A1 through A10, while Table 8 presents a summary of the net advisory and benchmark prices over the entire sample period. Figure 19 presents comparisons of the average advisory prices to the benchmarks. Table 9 presents a statistical summary of the net advisory prices and benchmarks for the first quarter of 1995 through the fourth quarter of 2004. Substantial variation exists between net advisory program prices across quarters. The highest price received for any of the 40 quarters was $59.03/cwt. by Stewart-Peterson in the second quarter of 1997. The lowest price was $18.42/cwt. received in the fourth quarter of 1998 by Ag Review. The highest average net advisory price was received in the second quarter of 1997 at $56.15/cwt., and the lowest average price was $22.62/cwt. in the fourth quarter of 1998. The average price received by all advisory programs over all 40 quarters was $42.75/cwt. Figure 19 compares net advisory prices to the three alternative benchmarks over 1995-2004. As shown in Table 9, the standard deviation in net advisory prices for each quarter is relatively small. The highest standard deviation occurred in the first quarter of 1999 at $2.94/cwt. The average standard deviation of market advisory prices was $1.73/cwt.

A couple of points need to be made prior to examining the advisory program performance results. First, the results are presented as a group. Individual programs are only evaluated in their performance across all quarters, not individually by individual quarters. Inferences about the performance of individual advisory programs in individual quarters are not made. It is possible that, as a group, the advisory programs perform poorly compared to the benchmarks, even as some individual advisory programs perform exceptionally well.

The second point is that hog producers subscribe to advisory programs for various reasons, not just marketing advice. Pennings et al. (2001) found, in a survey of producers, that market information and market analysis were the two highest rated uses of market advisory programs. It may be likely that the quality of marketing information and analysis is highly correlated with the returns to the marketing recommendations, but this may not be the case. It is possible that a program may provide useful information to a producer, but be unable to exhibit superior pricing performance.

Directional Performance

The proportion of advisory programs that beat the market benchmarks is the first performance indicator to be presented. If the proportion of advisory programs beating the corresponding benchmark exceeds 50% (the proportion observed if the advisory performance is random) then positive performance is indicated. This performance measure is not influenced by extremely low or high advisory prices.

Table 10 presents the proportion of advisory program prices above the three market benchmarks for the first quarter of 1995 through the fourth quarter of 2004. Average proportions for all advisory programs over all quarters are also presented for each benchmark. The overall averages may not equal the average of the individual marketing quarter averages. This is because the "grand" average weights each net advisory price equally. This would imply an equal

probability of randomly selecting an individual advisory program across the sample, where as an average of the individual marketing quarter averages would weight each quarter equally. The table also indicates substantial variation in the proportion of net advisory prices above each of the benchmarks for individual marketing quarters. During the fourth quarter of 1998, for example, hog prices bottomed and 92% of the programs beat the cash benchmark, no programs beat the index benchmark, and 42% beat the empirical benchmark. This is a result of the varying amount hedged by the index and empirical benchmarks. As prices fall throughout the marketing window, the short hedges used by the empirical and index benchmarks increase the price relative to the cash benchmark.

Table 10 also presents the average proportion of programs that beat each benchmark from the first quarter of 1995 through the fourth quarter of 2004. The average proportion above the cash benchmark is 34%, the average proportion above the index benchmark is 62%, and the proportion above the empirical benchmark is 52%. Under-performance by the advisory programs is indicated by the results compared to the cash benchmark, while the results for the index benchmark indicate superior performance by the programs. These results are consistent with the theory of normal backwardation. Performance compared to the empirical benchmark falls in between the cash and index benchmarks.

It is interesting to compare the results of market advisory programs with that of other investment professionals. According to Malkiel (1999), typically only 33% of the active mutual fund managers beat the stock market over 1974-1998. Results for advisory program performance indicate similar performance compared to the cash benchmark, while the programs performed much better compared to the other two benchmarks. The results for hog marketing may be due to a unique time period in hogs, relatively less efficient commodity markets, the skillfulness of advisory programs, or a return to risk.

In summary, directional evaluation of market advisory programs in hogs indicates under-performance compared to the cash benchmark, roughly equal performance compared to the empirical benchmark, and superior performance compared to the index benchmark. The average proportion of 34% of advisory program prices above the cash benchmark is well below the proportions above the 24-month market benchmark in corn and soybeans of 52% and 65% as reported by Irwin et al. (2006). Results indicate that the use of hedging prior to the marketing quarter has a negative impact on performance, as is suggested by the theory of normal backwardation.

Average Price Performance

The second indicator of advisory program performance is the difference between average advisory program prices and benchmark prices. This indicator takes both the magnitude and direction of the differences into account. They are calculated as the net advisory price minus the benchmark price. These differences are then averaged across each quarter for each advisory program and across all advisory programs for each quarter. A positive difference indicates a net advisory price above the benchmark and vice versa.

The average price performance tests conducted in this study differ from those used in the grains studies. Such tests for grains can only be applied on the yearly average and pooled

average due to small sample sizes and high correlations in net advisory prices. Analysis of individual programs would result in a small sample size, one per crop year, in grains. Average individual market advisory program differences can be tested in hogs as there are up to forty marketing quarters of observations available for the programs.

Average pricing performance results for 1995-2004 are presented in Tables 11 through 13. Only the programs tracked over the entire ten-year sample period are included. Table 11 presents the results in comparison to the cash benchmark. Table 12 presents the results compared to the index benchmark. And in Table 13 results are compared to the empirical benchmark.

A matched sample *t*-test of zero difference is used to assess statistical significance. The *t*-statistic is,

$$(12)\; t = \mu_{diff} \Big/ \left(\hat{\sigma} / \sqrt{n} \right)$$

where μ_{diff} is the average difference across the *n* marketing quarters in the sample and $\hat{\sigma}$ is the estimated standard deviation of the differences across *n* marketing quarters in the sample. The *t*-statistic follows a *t*-distribution with *n*-1 degrees of freedom. The two-tail *p*-value indicates the probability of observing a value of the *t*-statistic (or higher in absolute value) across many random samples. It is usually argued that the *p*-value must be equal to or smaller then 0.05 to confidently conclude that the average differences do not equal zero (Griffiths, Hill, and Judge, 1993, p.134). Essentially this means that there should be a less than 1 out of 20 chance that the wrong conclusion is reached.

Table 11 shows that four programs have average net advisory prices below the cash benchmark over the 40-quarters (Ag Review, AgLine, Brock, and Stewart-Peterson). While Top Farmer has an average net advisory price above the cash benchmark, the difference is not statistically significant. Table 12 shows that Top Farmer's average price is significantly higher than the average index benchmark price. None of the programs had an average price significantly lower than the index benchmark. Table 13 shows that Brock had an average price significantly below the average empirical benchmark price. None of the programs had an average price that was significantly above the empirical benchmark.

Use of the t-test in this analysis is complicated by the fact that net advisory prices are positively correlated. T-tests assume that sample differences are generated independently (e.g., Griffiths, Hill, and Judge, 1993, p.152). This is not the case with market advisory programs. Many programs use similar analytical methods and use much of the same supply and demand data (i.e., USDA Hogs and Pigs reports). Alternative programs from the same advisory service tend to give the same, or at least similar, recommendations, causing a high level of correlation.

Evidence as to the magnitude of the dependence problem can be obtained by determining correlation coefficients across net advisory program differences. The correlation coefficients range from -1 to +1, with -1 indicating perfect negative correlation in advisory prices and +1 indicating perfect positive correlation in advisory prices. Zero correlation indicates no (linear) relationship.

Table 14 shows the correlation coefficients for advisory programs active during the entire 1995-2004 sample period. The average correlations based on net advisory prices is 0.95, with all of the correlations 0.90 or above. This high level in correlation may be attributed to the use of the same cash price for the advisory programs, meaning that the only differences in advisory program prices are from futures and/or options gains/losses and brokerage costs. The average correlation in the dollar differences between net advisory prices is 0.36. There is a large range in the correlation in advisory program price differences (0.10 to 1.00), but all are positive.

An information problem occurs in this sample due to the high level of correlation. There are 360 samples (net advisory program prices) during this 40-quarter sample period. These prices are not independent as they have a high level of positive correlation. The important question is the amount of independent information that can be obtained from the 360 net advisory prices. The exact amount of information cannot be determined, but is less than 360.

The high level of correlation between advisory program prices causes an overstated reliability of sample estimates. This leads to a bias in the results towards significantly positive pricing performance. This study takes a conservative approach to address this problem. Statistical tests performed assume the minimum possible number of observations, 40, one for each quarter. If statistical tests based on this assumption indicate statistical significance, then a high degree of confidence could be placed on the conclusions. This assumption may cause positive pricing performance to be attributed to chance.

The average differences between advisory program prices and the benchmarks for the 40-quarters are shown in Table 15. The difference between the average advisory price and the benchmarks was -$0.37/cwt, -$0.10/cwt, and $0.33/cwt for the cash, empirical, and index benchmarks, respectively. None of the average differences between the advisory prices and the benchmarks are significantly different from zero for any of the benchmarks. Results so far have shown underperformance by the advisory programs, especially compared to the cash benchmark.

The average difference between the advisory prices and the benchmarks is presented in Figure 20. As Panel A shows, when cash prices are high, the price difference tends to be negative, and vice versa. Panel B demonstrates that when the index benchmark is high, the price difference is positive, and vice versa. Panel C does not indicate a pattern in the relationship between the empirical benchmark and the price difference. Results from Figure 19 can be verified by examining the correlations between the differences and the benchmarks. The correlations between the differences and the cash, index, and empirical benchmarks are -0.76, 0.38, and -0.10, respectively. The correlation with the cash benchmark shows that the cash benchmark and the differences tend to move in opposite directions. When the cash benchmark is high, the difference between the net advisory price and the benchmark tends to be negative. This means that the cash benchmark is higher than the average net advisory price when prices are high, and vice versa.

The results of the average performance tests indicate underperformance by the advisory programs compared to the cash benchmark and nearly equal performance compared to the empirical benchmark, while the programs appear to have outperformed compared to the index benchmark. These results fit the case of normal backwardation, as the programs tended to have

less hedged entering the marketing quarter than the index benchmark, and more than the cash benchmark, with the empirical benchmark in between. Table 11 shows significant underperformance by four of the nine programs compared to the cash benchmark. Table 12 shows significant outperformance of one program, with many others also higher on average, than the index benchmark. Table 13 indicated significant underperformance by one program compared to the empirical benchmark, with the remaining results mixed. Over the entire sample, none of the benchmarks were found to be statistically different from the advisory prices, on average. Difference correlation results are low, 0.36 over all forty quarters, compared to 0.73 for corn and 0.76 for soybeans according to Irwin, Good, Martines-Filho, and Batts (2006).

Risk/Return Analysis

Comparison of average advisory prices to the benchmarks may not provide a complete picture of performance. For example, it is possible that two advisory programs may receive the same net price, but take on different levels of risk in doing so. The variation in the risk levels incurred by the programs may be due to the use of different pricing tools (i.e., futures and options), timing of hedging positions, and variation in the implementation of complex marketing strategies.

E-V analysis is often used to evaluate decision-making under risk by substituting standard deviation for variance. In E-V analysis, risk is the chance that producers fail to achieve an expected net price. This risk includes prices falling above and below expectations. In this case, risk is uncertainty of an outcome, whether better or worse. For example, a net advisory price of $45.00/cwt or $55.00/cwt would count in determining the risk of an advisory program with an expected price or $50.00/cwt. An advisory program is considered less risky if its net price tends to be close to its expected price. A program is considered risky if its net price tends to fall further away from its expected price.

Table 16 presents the information used to perform E-V analysis of advisory pricing performance. Only programs tracked during all 40 quarters are included. Standard deviations ranged from $7.44/cwt to $9.06/cwt over 1995-2004. Benchmark standard deviations varied from $6.44/cwt for the index benchmark to $9.10/cwt for the cash benchmark. The empirical benchmark had a standard deviation of $8.13/cwt.

Figure 21 shows the plot of average price and risk for individual advisory programs and the market benchmarks. Each plot is divided in to four quadrants, with the upper left having a higher price and less risk than the benchmark. Panel A shows that only one program dominates the cash benchmark in terms of both price and risk, while the other eight programs have a lower price and less risk. Panel B shows that no programs dominate the index benchmark in terms of both price and risk, but that four programs are inferior. Panel C shows that two programs dominate the empirical benchmark in terms of both price and risk, while two programs are inferior to it.

E-V analysis is used to determine whether inclusion of risk changes performance conclusions based on average price only. This is done by comparing the proportion of programs that beat the market benchmarks based on price only to the proportion that dominate based on price and risk. 34% of the programs had a higher price than the cash benchmark, while only

11% of the advisory programs dominated the cash benchmark based on price and risk. 52% of the advisory programs had higher net prices than the empirical benchmark compared to 22% that dominated the benchmark. 62% of the advisory programs had a higher price than the index benchmark, while none dominated the benchmark. Thus, evidence suggests that the inclusion of risk lowers the performance of the advisory programs, especially in comparison to the index benchmark. These results are similar to those found in corn, soybeans, and wheat (Irwin et al., 2006; Batts, Irwin, and Good, 2009).

Predictability Tests

There tends to be a large variation in net advisory prices for any given quarter. This brings about the question of the predictability of advisory program performance over time. The correlation of advisory program ranks, which has been widely used to analyze financial investment performance (e.g., Elton, Gruber, and Rentzler, 1987; Irwin, Zulauf, and Ward, 1994; Lakonishok, Shleifer, and Vishny, 1992; Malkiel, 1995) is used in this study.

The sample of advisory programs active in adjacent marketing years must be assembled first. Next, each advisory program in the first quarter of the pair (e.g., t=1995Q1) must be ranked and sorted in descending rank order. The advisory programs in the second quarter of the pair (e.g., t+1=1995Q2) must be ranked. Next, the correlation coefficient between the ranks of the adjacent quarters must be computed. A correlation coefficient near zero indicates that advisory program performance is unpredictable. The appropriate test is a Z-test, as it is assumed that the standard error of the correlation coefficient is approximately equal to $1/\sqrt{T}$.

Table 17 presents the results from the rank correlation predictability tests. Rank correlations ranged from -0.30 to 0.86 and averaged 0.33. Nine of the thirty-nine comparisons were statistically significant. However, the p-values overstate significance of the rank correlations due to the dependence across advisory programs. These results indicate some level of predictability in pricing performance of top- and bottom-performing market advisory programs.

Table 18 presents the results for predictability by rank of market advisory program performance between adjacent marketing years. This analysis was performed as there may be predictability over time, while performance from quarter-to-quarter is unpredictable. The correlation coefficient ranged from -0.28 to 0.46 and averaged 0.12 over 1995-2004.

Table 19 presents predictability results by rank for the first half of the sample period compared to the second half of the sample period (1995-1999 vs. 2000-2004). The correlation coefficient was only 0.52, which indicated a moderate amount of predictability. However, the coefficient was not statistically significant.

In addition to examining the correlation in performance over different time periods, comparisons between the top- and bottom-performing groups of programs were performed. To do this, the performance of the top-third of programs was compared to the bottom-third, as well as the top-fourth to the bottom-fourth. Again, this was done for adjacent quarters, as well as adjacent marketing years and the first half versus the second half of the sample period.

Table 20 presents the results of the top performing groups to the bottom performing groups between adjacent quarters. Results show that the top-third of the programs beat the bottom-third by a significant $1.10/cwt. Similarly, the top-fourth of the programs beat the bottom fourth by a significant $1.30/cwt. However, in both cases the difference between the top performing group and the bottom performing group was much lower than in the initial quarter. Much of the persistence may be caused by the overlapping of the marketing window for each quarter, as many of the programs begin marketing a portion of production prior to the quarter. Program selection based on this analysis would not be possible, as the nine months of the marketing window prior to the quarter would have already passed by the time the prior marketing quarter ended.

Table 21 presents the results for adjacent marketing years. Positive performance was found in the second year for both comparisons; however, the differences were not found to be significant. The difference between the top-third and bottom-third was only $0.38/cwt, while it had been $2.23/cwt in the initial year. The difference between the top-fourth and bottom-fourth was only $0.56/cwt, much lower than the $2.70/cwt difference in the initial year.

Table 22 presents the results for the comparisons between the top and bottom performing groups for 1995-1999 vs. 2000-2004. The difference between the top-third and bottom-third decreased from $1.39/cwt to $0.93/cwt from the first half of the study to the second half. The difference between the top-fourth and the bottom-fourth decreased from $1.57/cwt to $1.08/cwt from the first half to the second half of the study. T-tests could not be performed for such a small sample size.

The predictability results found little evidence of persistence in performance. Only nine of thirty-nine pairs on a quarterly basis showed statistically significant rank correlations. Average rank correlation was 0.12 across marketing years, compared to 0.27 for corn and 0.25 for soybeans by Irwin, Good, Martines-Filho, and Batts (2006). Performance comparisons between the top and bottom performing groups indicates some persistence in performance across time, with some significance when examined across quarters. Even though persistence is found, the difference in the price received by the top performing group and the bottom performing group decreases in the time period following the creation of the groups. Predictability results are mixed.

Summary

This report was developed to evaluate the pricing performance of market advisory services in hogs over the 1995-2004 marketing years. Market advisory service performance and predictability of performance are measured. A minimum of eleven advisory programs were tracked each year over 1995-2004. Even though the sample of market advisory services is non-random, it is generally representative of the majority of advisory services available to farmers. Additionally, the sample of advisory services includes all programs tracked by the AgMAS Project over 1995-2004, minimizing the impact of survivorship bias. The AgMAS Project subscribes to each of the services that are included and records recommendations in real-time, eliminating any hindsight bias.

Some explicit assumptions are made in order to produce consistent and comparable results across advisory programs. The assumptions are used to accurately depict marketing conditions faced by a representative Iowa/Minnesota hog producer. Some key assumptions are: i) the typical marketing window begins nine months prior to the beginning of the marketing quarter and ends at the end of the quarter (creating a twelve month window), ii) hogs are produced and sold on a consistent schedule, iii) producers do not face any production risk, iv) brokerage costs are subtracted for all futures and options transactions. Using these and other assumptions, the net price received by a producer following advice from a market advisory program is calculated for the 1995-2004 marketing years.

Three benchmarks are created to use in the performance evaluations. Efficient market theory suggests that the return offered by the market is the relevant benchmark. In this study, that would indicate that a market benchmark should be the average price offered by the market over the marketing window. In the case of hogs, the calculation of such a benchmark depends on the amount of hedging done prior to the marketing quarter. The theory of normal backwardation implies that the more that is hedged prior to the marketing quarter, the lower the average price will be. In this study, the first benchmark measures the average cash price offered during the marketing quarter. Another benchmark measures the average price offered over the entire marketing window, assuming an equal amount is sold each day. The final benchmark is based on the average marketing profiles of the advisory programs and hedges only 25% of production prior to the quarter.

The first indicator of market advisory program pricing performance is the proportion of program prices above the benchmarks. Results show that the advisory programs only beat the cash benchmark 34% of the time. They received a higher price than the index benchmark 62% of the time and the empirical benchmark 52% of the time. The results indicate the presence of normal backwardation, as the average price decreases for the benchmarks as the amount hedged prior to the quarter increases.

The second indicator examines the average price performance of the advisory programs. None of the programs had a significantly higher average price than the cash or the empirical benchmark. Only one program had a significantly higher average price than the index benchmark. Additionally, no significant differences between the average advisory price and any of the benchmarks were found. Results also indicate a negative correlation between the difference between the cash benchmark and the average advisory price and the cash benchmark.

The third indicator examines risk versus return of the programs. One program dominated the cash benchmark in terms of both risk and return. None of the programs dominated the index benchmark, while two programs dominated the empirical benchmark. When examining the proportion of programs outperforming the benchmarks based on risk and return, the performance is much lower than when examining performance based on returns alone.

Finally, predictability of program performance is examined. To do so programs are ranked based on price for each quarter. Then, correlations between the ranks of adjacent quarters are examined. The correlations ranged from -0.30 to 0.86, and averaged 0.33. Additionally, nine of the thirty-nine comparisons were significant. However, on average these results indicate a very limited amount of predictability. Predictability between adjacent marketing years yielded

even worse results. Correlation coefficients ranged from -0.28 to 0.46, with an average of 0.12. Persistence in pricing performance was found when comparing top performing groups to bottom performing groups. When such comparisons are made in adjacent quarters, the persistence is significant. However, decisions based on the results for the adjacent quarters are not implementable and may be affected by the overlapping nature of the marketing windows. Results in Tables 21 and 22 still indicated some level of persistence, but it was not found to be significant.

Based on the indicators, market advisory program performance in hogs is not significantly superior to the benchmarks. Performance was especially low when compared to the cash benchmark. As the profiles showed, the programs typically hedged roughly 25% prior to the start of the marketing quarter. The results indicate the existence of normal backwardation during the period of this study. In such a case, hedging prior to the quarter would lower the average price received. Additionally, performance was even weaker when risk was included in the analysis. Finally, the predictability of advisory program performance is minimal, especially when examined over longer time periods.

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Table 1. Market Advisory Programs Tracked by the AgMAS Project, Hogs, 1995-2004 Crop Years

Market Advisory Program	Crop Year 1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Comments
Ag Profit by Hjort	✓	✓	✓	✓	✓	✓					Went out of business at the end of August 2000.
Ag Review	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Included for all hog marketing years to date.
AgLine by Doane (hedge)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Included for all hog marketing years to date.
AgResource	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Included for all hog marketing years to date.
AgriVisor (aggressive cash)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Included for all hog marketing years to date.
AgriVisor (aggressive hedge)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Included for all hog marketing years to date.
Brock (hedge)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Included for all hog marketing years to date.
Grain Field Report	✓										Stopped providing specific recommendations after 1995 crop year.
North American Ag	✓										Stopped providing specific recommendations after 1995 crop year.
Pro Farmer (hedge)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Included for all hog marketing years to date.
Progressive Ag		✓	✓	✓	✓	✓	✓	✓	✓	✓	Previous to 1996, did not make clear enough recommendations to be tracked.
Prosperous Farmer	✓										Stopped providing specific recommendations after 1995 crop year.
Stewart-Peterson Advisory Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Included for all hog marketing years to date.
Top Farmer Intelligence	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Included for all hog marketing years to date.
Utterback Marketing Services			✓	✓	✓	✓	✓	✓	✓	✓	Previous to 1997, did not make clear enough recommendations to be tracked.

Note: A marketing year includes four marketing quarters which each cover the three month marketing quarter plus the nine months prior to the quarter.

Table 2. Frequency of Marketing Tool Use by Individual Market Advisory Programs, Hogs, 1995 - 2004

	Marketing Tool				
Market Advisory Program	Futures Only	Options Only	Combination of Futures and Options	No Futures or Options Positions	Total
			---Number of Quarters---		
Ag Profit by Hjort	21	0	0	3	24
Ag Review	30	0	6	4	40
AgLine by Doane	28	4	0	8	40
AgResource	5	16	8	11	40
AgriVisor (aggressive hedge)	22	0	9	9	40
AgriVisor (basic hedge)	26	0	5	9	40
Brock	34	1	4	1	40
Pro Farmer	23	1	2	14	40
Progressive Ag	3	2	11	20	36
Stewart-Peterson	14	4	20	2	40
Top Farmer Intelligence	27	1	12	0	40
Utterback Marketing Services	3	8	15	6	32
Total	236	37	92	87	452
			---Percentage of Quarters---		
Ag Profit by Hjort	87.5	0.0	0.0	12.5	100
Ag Review	75.0	0.0	15.0	10.0	100
AgLine by Doane	70.0	10.0	0.0	20.0	100
AgResource	12.5	40.0	20.0	27.5	100
AgriVisor (aggressive hedge)	55.0	0.0	22.5	22.5	100
AgriVisor (basic hedge)	65.0	0.0	12.5	22.5	100
Brock	85.0	2.5	10.0	2.5	100
Pro Farmer	57.5	2.5	5.0	35.0	100
Progressive Ag	8.3	5.6	30.6	55.6	100
Stewart-Peterson	35.0	10.0	50.0	5.0	100
Top Farmer Intelligence	67.5	2.5	30.0	0.0	100
Utterback Marketing Services	9.4	25.0	46.9	18.8	100
Average	52.2	8.2	20.4	19.2	100

Note: Advisory programs that are include for only one year are not listed in this table due to lack of observations.

Table 3. Frequency Counts of Marketing Tool Use by Marketing Quarter, Hogs, 1995 - 2004

	Marketing Tool				
Marketing Quarter	Futures Only	Options Only	Combination of Futures and Options	No Futures or Options Positions	Total
1995 Q1	7	1	1	1	10
1995 Q2	8	1	1	0	10
1995 Q3	7	0	3	0	10
1995 Q4	7	0	3	0	10
1996 Q1	9	1	0	1	11
1996 Q2	8	0	3	0	11
1996 Q3	7	0	4	0	11
1996 Q4	5	1	4	1	11
1997 Q1	6	2	2	2	12
1997 Q2	5	0	6	1	12
1997 Q3	4	0	6	2	12
1997 Q4	5	0	4	3	12
1998 Q1	5	1	2	4	12
1998 Q2	4	2	2	4	12
1998 Q3	4	4	2	2	12
1998 Q4	8	1	3	0	12
1999 Q1	7	1	3	1	12
1999 Q2	9	1	1	1	12
1999 Q3	7	0	2	3	12
1999 Q4	8	0	3	1	12
2000 Q1	8	1	1	2	12
2000 Q2	7	1	1	3	12
2000 Q3	5	0	3	4	12
2000 Q4	5	1	3	3	12
2001 Q1	6	3	0	2	11
2001 Q2	6	0	5	0	11
2001 Q3	6	0	4	1	11
2001 Q4	6	0	4	1	11
2002 Q1	4	1	1	5	11
2002 Q2	3	1	2	5	11
2002 Q3	3	2	0	6	11
2002 Q4	2	3	2	4	11
2003 Q1	3	1	1	6	11
2003 Q2	7	1	1	2	11
2003 Q3	5	2	2	2	11
2003 Q4	6	1	0	4	11
2004 Q1	7	0	1	3	11
2004 Q2	5	0	2	4	11
2004 Q3	5	2	2	2	11
2004 Q4	7	1	2	1	11

Note: Advisory programs that are include for only one year are not listed in this table due to lack of observations.

Table 4. Frequency Percentages of Marketing Tool Use by Marketing Quarter, Hogs, 1995 - 2004

	Marketing Tool				
Marketing Quarter	Futures Only	Options Only	Combination of Futures and Options	No Futures or Options Positions	Total
1995 Q1	70	10	10	10	100
1995 Q2	80	10	10	0	100
1995 Q3	70	0	30	0	100
1995 Q4	70	0	30	0	100
1996 Q1	82	9	0	9	100
1996 Q2	73	0	27	0	100
1996 Q3	64	0	36	0	100
1996 Q4	45	9	36	9	100
1997 Q1	50	17	17	17	100
1997 Q2	42	0	50	8	100
1997 Q3	33	0	50	17	100
1997 Q4	42	0	33	25	100
1998 Q1	42	8	17	33	100
1998 Q2	33	17	17	33	100
1998 Q3	33	33	17	17	100
1998 Q4	67	8	25	0	100
1999 Q1	58	8	25	8	100
1999 Q2	75	8	8	8	100
1999 Q3	58	0	17	25	100
1999 Q4	67	0	25	8	100
2000 Q1	67	8	8	17	100
2000 Q2	58	8	8	25	100
2000 Q3	42	0	25	33	100
2000 Q4	42	8	25	25	100
2001 Q1	55	27	0	18	100
2001 Q2	55	0	45	0	100
2001 Q3	55	0	36	9	100
2001 Q4	55	0	36	9	100
2002 Q1	36	9	9	45	100
2002 Q2	27	9	18	45	100
2002 Q3	27	18	0	55	100
2002 Q4	18	27	18	36	100
2003 Q1	27	9	9	55	100
2003 Q2	64	9	9	18	100
2003 Q3	45	18	18	18	100
2003 Q4	55	9	0	36	100
2004 Q1	64	0	9	27	100
2004 Q2	45	0	18	36	100
2004 Q3	45	18	18	18	100
2004 Q4	64	9	18	9	100

Note: Advisory programs that are include for only one year are not listed in this table due to lack of observations.

Table 5. Magnitude of Net Amount Sold by Market Advisory Programs, Hogs, Selected Dates, 1995 - 2004

Market Advisory Program	Months Prior to Start of Marketing Quarter			
	9-months	6-months	3-months	0-months
		---percent---		
Average Net Amount Sold				
Ag Profit by Hjort	6.2	12.5	18.1	22.6
Ag Review	0.0	0.0	3.1	19.2
AgLine by Doane	3.1	8.4	15.6	27.4
AgResource	0.0	0.8	6.0	13.9
AgriVisor (aggressive hedge)	4.5	7.5	10.3	16.9
AgriVisor (basic hedge)	3.4	5.7	7.8	15.0
Brock	2.5	10.0	22.0	25.8
Pro Farmer	0.6	4.4	11.3	15.8
Progressive Ag	4.4	4.9	10.0	12.1
Stewart-Peterson	0.8	5.7	7.3	24.1
Top Farmer Intelligence	2.3	11.1	18.9	22.0
Utterback Marketing Services	0.0	1.4	15.4	26.8
All Programs	2.3	6.0	12.1	20.1
Minimum Net Amount Sold				
Ag Profit by Hjort	0.0	0.0	0.0	0.0
Ag Review	0.0	0.0	-50.0	0.0
AgLine by Doane	0.0	0.0	0.0	0.0
AgResource	0.0	0.0	-17.1	-41.4
AgriVisor (aggressive hedge)	0.0	0.0	0.0	0.0
AgriVisor (basic hedge)	0.0	0.0	0.0	0.0
Brock	0.0	0.0	0.0	0.0
Pro Farmer	0.0	0.0	0.0	0.0
Progressive Ag	0.0	0.0	0.0	0.0
Stewart-Peterson	0.0	0.0	0.0	-100.0
Top Farmer Intelligence	0.0	0.0	0.0	0.0
Utterback Marketing Services	0.0	0.0	0.0	0.0
All Programs	0.0	0.0	-50.0	-100.0
Maximum Net Amount Sold				
Ag Profit by Hjort	50.0	51.6	78.3	63.3
Ag Review	0.0	0.0	50.0	34.7
AgLine by Doane	50.0	50.0	75.0	100.0
AgResource	0.0	25.3	66.7	83.3
AgriVisor (aggressive hedge)	66.0	66.0	66.0	110.0
AgriVisor (basic hedge)	50.0	50.0	50.0	100.0
Brock	50.0	50.0	85.1	75.0
Pro Farmer	25.0	50.0	75.0	89.0
Progressive Ag	75.0	75.0	100.6	102.1
Stewart-Peterson	33.3	100.0	100.0	100.0
Top Farmer Intelligence	50.0	100.0	100.0	101.6
Utterback Marketing Services	0.0	40.0	64.4	100.0
All Programs	75.0	100.0	100.6	110.0

Note: Advisory programs that are include for only one year are not listed in this table due to lack of observations.

Table 6. Calculation of Index Benchmark Example for the First Quarter of 1995, Hogs

Net Futures Prices for a Given Month			
Jan 9-month Average Price (Sell Price)	40.39		
01/18/95 (Buy Price)	40.60		
		Futures gain/loss	-0.21
		Jan. Net gain/loss (1/3 * gains/loss)	-0.07
Feb 9-month Average Price (Sell Price)	39.94		
02/15/95 (Buy Price)	38.30		
		Futures gain/loss	1.64
		Feb Net gain/loss (1/3 * gains/loss)	0.55
Mar 9-month Average Price (Sell Price)	39.94		
03/15/95 (Buy price)	41.50		
		Futures gain/loss	-1.56
		Mar Net gain/loss (1/3 * gains/loss)	-0.52
		Total Net gain/loss	-0.04
Index Hedge Amount	0.75		
		Net Hedge gain/loss on 1995Q1	-0.03
		(0.75 * -1.84)	
Iowa/Minnesota Quarterly Adjusted Cash Price:			
	38.73		
1995 Q1 Alternative benchmark			
Cash Plus Net Hedge gain/loss	38.70		

Note: The January nine month average is from the February Live Hog Contract average from 04/04/94 through 12/31/94 and the February and March average sell prices are from the April Live Hog Contract for the same time period. Futures gains/losses are simply the sell price minus the buy price. Each futures gains/losses is multiplied by 1/3 because each selective hedge is for one month or 1/3 of each marketing quarter's production. These net gains/losses are added up and multiplied by the index percentage of 75% to arrive at the net hedge gains/losses for 1995Q1. The net hedge gains/losses are added to the cash benchmark to arrive at the index benchmark for the first quarter of 1995.

Table 7. Cash, Index, and Empirical Benchmarks, Hogs, 1995 - 2004

Quarter	Quarterly Average Benchmark Price		
	Cash	Index	Empirical
		---$/cwt.---	
1995 Q1	38.73	38.70	38.72
1995 Q2	39.41	39.20	39.34
1995 Q3	49.01	46.56	48.19
1995 Q4	43.42	40.49	42.45
1996 Q1	46.36	44.99	45.90
1996 Q2	54.76	47.92	52.48
1996 Q3	58.01	52.28	56.10
1996 Q4	54.91	51.63	54.04
1997 Q1	51.50	51.19	51.39
1997 Q2	56.44	52.96	55.28
1997 Q3	55.05	52.51	54.20
1997 Q4	43.64	47.18	44.82
1998 Q1	34.82	40.31	36.65
1998 Q2	39.38	41.21	39.99
1998 Q3	33.62	40.32	35.86
1998 Q4	19.25	28.92	22.47
1999 Q1	27.09	30.21	28.13
1999 Q2	34.12	33.62	33.96
1999 Q3	35.70	41.56	37.65
1999 Q4	36.37	36.20	36.31
2000 Q1	41.13	38.02	40.09
2000 Q2	51.54	46.13	49.74
2000 Q3	46.69	47.94	47.11
2000 Q4	39.66	39.68	39.67
2001 Q1	42.48	39.31	41.42
2001 Q2	52.03	47.46	50.51
2001 Q3	51.05	46.44	49.51
2001 Q4	37.62	39.20	38.15
2002 Q1	39.72	38.05	39.16
2002 Q2	35.86	42.89	38.21
2002 Q3	34.75	40.54	34.75
2002 Q4	31.48	28.61	30.52
2003 Q1	36.30	34.10	35.57
2003 Q2	44.12	42.56	43.60
2003 Q3	42.67	41.08	42.14
2003 Q4	36.09	36.00	36.06
2004 Q1	43.64	43.35	43.54
2004 Q2	54.28	48.09	52.21
2004 Q3	56.01	49.71	53.91
2004 Q4	55.41	48.72	53.18
Descriptive Statistics:			
Average	43.10	42.40	42.82
Standard Deviation	9.10	6.44	8.13

Note: The average quarterly cash price is adjusted from the Iowa/Minnesota quarterly carcass price. The index benchmark consists of the cash benchmark plus gains/losses associated with a 75% hedged position accumulated over 9-months prior to the marketing quarter. Hedges are lifted once a month throughout the marketing quarter. The empirical benchmark is simply the index benchmark with hedge positions adjusted down to reflect the lower hedge percentages indicated in quarterly average marketing profiles for advisors.

Table 8. Pricing Performance Results for 14 Market Advisory Programs, Hogs, 1995-1999

Market Advisory Program	1995 1st Quarter	1995 2nd Quarter	1995 3rd Quarter	1995 4th Quarter	1996 1st Quarter	1996 2nd Quarter	1996 3rd Quarter	1996 4th Quarter	1997 1st Quarter	1997 2nd Quarter	1997 3rd Quarter	1997 4th Quarter	1998 1st Quarter	1998 2nd Quarter	1998 3rd Quarter	1998 4th Quarter	1999 1st Quarter	1999 2nd Quarter	1999 3rd Quarter	1999 4th Quarter
									--- $/cwt ---											
Ag Profit by Hjort	38.70	39.83	48.47	42.44	45.48	53.14	54.91	54.38	51.50	56.94	55.54	43.64	34.82	39.87	33.83	22.39	28.24	36.00	36.10	36.03
Ag Resource	38.91	40.82	46.34	44.00	47.37	49.92	57.02	55.78	51.50	56.44	55.05	43.64	34.82	40.45	34.65	20.83	27.88	34.55	37.33	36.65
Ag Review	36.25	36.85	46.05	41.05	45.98	56.21	58.50	52.95	54.02	56.79	55.68	44.26	34.22	39.58	32.61	18.42	26.99	32.24	35.57	34.41
AgLine by Doane	38.19	40.97	46.23	41.01	45.97	49.54	51.08	47.26	51.13	55.81	55.05	43.64	35.48	39.57	35.93	21.89	30.29	37.32	38.44	38.26
AgriVisor (aggressive hedge)	36.36	39.33	47.12	42.33	45.93	52.98	56.71	54.49	52.80	54.38	52.70	41.29	34.82	39.38	33.62	25.53	31.40	33.91	35.70	35.61
AgriVisor (basic hedge)	36.93	39.35	47.74	42.23	46.06	53.49	57.05	54.51	52.56	54.96	53.27	41.86	34.82	39.38	33.62	25.53	31.40	33.91	35.70	35.61
Brock	38.55	36.73	44.78	41.87	46.60	49.31	53.05	51.75	51.89	55.65	53.15	43.02	34.80	40.09	33.92	20.85	27.20	32.44	35.15	38.07
Grain Field Report	39.07	39.25	48.79	43.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
North American Ag.	38.71	38.99	48.46	43.32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pro Farmer	38.73	39.06	47.67	42.87	46.01	50.09	54.67	53.18	49.55	54.28	56.05	45.49	36.57	39.38	33.68	26.48	31.32	38.67	41.53	34.14
Progressive Ag	N/A	N/A	N/A	N/A	46.36	54.53	57.43	54.91	51.36	56.74	53.70	42.29	38.46	43.02	37.26	22.89	27.09	34.12	35.70	36.37
Prosperous Farmer	38.73	39.96	49.59	43.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stewart-Peterson Advisory Reports	37.03	35.99	46.09	41.09	42.73	51.10	53.34	54.98	51.93	59.03	55.68	40.84	36.00	38.11	35.40	19.42	20.87	35.55	30.39	36.52
Top Farmer Intelligence	38.86	41.02	46.94	39.87	45.61	52.87	57.61	55.08	51.48	56.98	55.73	44.69	39.90	42.97	42.22	27.14	26.39	33.89	36.20	35.55
Utterback Marketing Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	51.75	55.82	53.18	40.76	38.71	39.38	33.33	20.08	28.10	34.08	40.87	31.14
Descriptive Statistics:																				
Average	38.08	39.09	47.25	42.20	45.83	52.11	55.58	53.57	51.79	56.15	54.57	42.95	36.12	40.10	35.01	22.62	28.10	34.72	36.56	35.70
Median	38.70	39.33	47.12	42.33	45.98	52.87	56.71	54.49	51.62	56.13	55.05	43.33	35.15	39.58	33.88	22.14	27.99	34.10	35.90	35.82
Minimum	36.25	35.99	44.78	39.87	42.73	49.31	51.08	47.26	49.55	54.28	52.70	40.76	34.22	38.11	32.61	18.42	20.87	32.24	30.39	31.14
Maximum	39.07	41.02	49.59	44.00	47.37	56.21	58.50	55.78	54.02	59.03	56.05	45.49	39.90	43.02	42.22	27.14	31.40	38.67	41.53	38.26
Range	2.82	5.04	4.81	4.13	4.63	6.90	7.42	8.52	4.47	4.75	3.35	4.73	5.68	4.91	9.60	8.73	10.53	6.43	11.14	7.12
Standard Deviation	1.04	1.63	1.36	1.18	1.15	2.27	2.33	2.39	1.07	1.31	1.25	1.55	1.89	1.46	2.61	2.92	2.94	1.88	2.88	1.89
Market Benchmarks																				
Cash	38.73	39.41	49.01	43.42	46.36	54.76	58.01	54.91	51.50	56.44	55.05	43.64	34.82	39.38	33.62	19.25	27.09	34.12	35.70	36.37
Empirical	38.72	39.34	48.19	42.45	45.90	52.48	56.10	54.04	51.39	55.28	54.20	44.82	36.65	39.99	35.86	22.47	28.13	33.96	37.65	36.31
Index	38.70	39.20	46.56	40.49	44.99	47.92	52.28	51.63	51.19	52.96	52.51	47.18	40.31	41.21	40.32	28.92	30.21	33.62	41.56	36.20

Table 8, Continued

Market Advisory Program	2000 1st Quarter	2000 2nd Quarter	2000 3rd Quarter	2000 4th Quarter	2001 1st Quarter	2001 2nd Quarter	2001 3rd Quarter	2001 4th Quarter	2002 1st Quarter	2002 2nd Quarter	2002 3rd Quarter	2002 4th Quarter	2003 1st Quarter	2003 2nd Quarter	2003 3rd Quarter	2003 4th Quarter	2004 1st Quarter	2004 2nd Quarter	2004 3rd Quarter	2004 4th Quarter
	--- $/cwt ---																			
Ag Profit by Hjort	37.30	46.83	44.80	38.68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ag Resource	41.13	51.87	46.69	40.36	43.65	51.77	50.45	37.62	39.72	35.86	34.85	31.94	36.30	44.48	43.03	37.79	41.84	50.73	55.43	53.67
Ag Review	39.68	51.72	47.73	39.65	39.22	48.32	51.05	38.19	39.24	36.65	36.33	30.84	36.30	45.52	42.67	36.09	40.96	49.53	52.57	52.42
AgLine by Doane	36.96	45.28	46.69	39.66	42.48	50.12	45.24	39.45	39.72	35.86	34.75	30.76	36.60	43.93	43.35	34.83	42.27	50.34	55.15	53.22
AgriVisor (aggressive hedge)	39.57	49.08	48.42	40.82	42.62	52.47	51.37	37.95	39.72	35.86	34.75	31.48	36.30	45.33	43.11	35.55	43.13	53.92	55.58	53.37
AgriVisor (basic hedge)	39.57	49.08	48.06	40.82	42.62	52.53	51.37	37.95	39.72	35.86	34.75	31.48	36.30	44.99	43.05	35.55	43.13	53.92	55.58	53.37
Brock	38.63	46.68	48.93	40.19	42.17	49.48	49.48	37.77	39.30	35.45	35.11	31.48	36.41	46.20	44.01	37.05	45.12	51.64	54.34	50.70
Grain Field Report	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
North American Ag.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pro Farmer	38.08	51.54	46.69	39.66	42.48	50.68	46.25	39.32	39.33	36.19	34.75	31.48	36.30	44.12	42.08	36.09	43.64	54.28	56.01	53.52
Progressive Ag	41.13	51.54	46.69	39.66	42.09	51.57	50.54	37.12	39.72	35.86	34.75	31.01	36.30	44.12	49.26	36.09	43.64	54.28	56.01	55.41
Prosperous Farmer	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stewart-Peterson Advisory Reports	40.99	45.85	47.00	37.97	41.20	50.76	49.56	36.68	42.62	41.10	34.75	30.99	37.62	43.16	49.01	38.43	41.66	54.28	49.32	48.67
Top Farmer Intelligence	41.67	52.64	45.90	40.42	42.95	47.21	49.77	42.08	42.92	43.29	35.40	29.23	34.49	43.69	43.32	37.95	42.65	50.08	53.17	49.35
Utterback Marketing Services	37.06	51.54	47.27	40.70	42.73	47.23	44.35	36.67	38.85	37.90	35.00	26.37	34.49	43.69	43.32	37.95	42.65	50.08	53.17	49.35
Descriptive Statistics:																				
Average	39.31	49.47	47.07	39.88	42.20	50.20	49.04	38.25	40.08	37.26	35.02	30.64	36.13	44.48	44.20	36.67	42.79	52.10	54.21	52.09
Median	39.57	50.31	46.84	39.93	42.48	50.68	49.77	37.95	39.72	35.86	34.75	31.01	36.30	44.12	43.32	36.09	42.65	51.64	55.15	53.22
Minimum	36.96	45.28	44.80	37.97	39.22	47.21	44.35	36.67	38.85	35.45	34.75	26.37	34.49	43.16	42.08	34.83	40.96	49.53	49.32	48.67
Maximum	41.67	52.64	48.93	40.82	43.65	52.53	51.37	42.08	42.92	43.29	36.33	31.94	37.62	46.20	49.26	38.43	45.12	54.28	56.01	55.41
Range	4.71	7.35	4.14	2.85	4.43	5.32	7.02	5.41	4.08	7.84	1.57	5.56	3.13	3.04	7.17	3.60	4.16	4.75	6.69	6.74
Standard Deviation	1.70	2.69	1.12	0.87	1.15	1.93	2.54	1.56	1.36	2.57	0.48	1.58	0.90	0.93	2.48	1.21	1.14	2.02	2.04	2.21
Market Benchmarks																				
Cash	41.13	51.54	46.69	39.66	42.48	52.03	51.05	37.62	39.72	35.86	34.75	31.48	36.30	44.12	42.67	36.09	43.64	54.28	56.01	55.41
Empirical	40.09	49.74	47.11	39.67	41.42	50.51	49.51	38.15	39.16	38.21	34.75	30.52	35.57	43.60	42.14	36.06	43.54	52.21	53.91	53.18
Index	38.02	46.13	47.94	39.68	39.31	47.46	46.44	39.20	38.05	42.89	40.54	28.61	34.10	42.56	41.08	36.00	43.35	48.09	49.71	48.72

Table 9. Descriptive Statistics for Market Advisory Program Pricing Results, Hogs, 1995 - 2004

		Net Advisory Price				Market Benchmark Price		
Quarter	Number of Programs	Average	Standard Deviation	Minimum	Maximum	Cash	Index	Empirical
			---$/cwt.---				---$/cwt.---	
1995 Q1	13	38.08	1.04	36.25	39.07	38.73	38.70	38.72
1995 Q2	13	39.09	1.63	35.99	41.02	39.41	39.20	39.34
1995 Q3	13	47.25	1.36	44.78	49.59	49.01	46.56	48.19
1995 Q4	13	42.20	1.18	39.87	44.00	43.42	40.49	42.45
1996 Q1	11	45.83	1.15	42.73	47.37	46.36	44.99	45.90
1996 Q2	11	52.11	2.27	49.31	56.21	54.76	47.92	52.48
1996 Q3	11	55.58	2.33	51.08	58.50	58.01	52.28	56.10
1996 Q4	11	53.57	2.39	47.26	55.78	54.91	51.63	54.04
1997 Q1	12	51.79	1.07	49.55	54.02	51.50	51.19	51.39
1997 Q2	12	56.15	1.31	54.28	59.03	56.44	52.96	55.28
1997 Q3	12	54.57	1.25	52.70	56.05	55.05	52.51	54.20
1997 Q4	12	42.95	1.55	40.76	45.49	43.64	47.18	44.82
1998 Q1	12	36.12	1.89	34.22	39.90	34.82	40.31	36.65
1998 Q2	12	40.10	1.46	38.11	43.02	39.38	41.21	39.99
1998 Q3	12	35.01	2.61	32.61	42.22	33.62	40.32	35.86
1998 Q4	12	22.62	2.92	18.42	27.14	19.25	28.92	22.47
1999 Q1	12	28.10	2.94	20.87	31.40	27.09	30.21	28.13
1999 Q2	12	34.72	1.88	32.24	38.67	34.12	33.62	33.96
1999 Q3	12	36.56	2.88	30.39	41.53	35.70	41.56	37.65
1999 Q4	12	35.70	1.89	31.14	38.26	36.37	36.20	36.31
2000 Q1	12	39.31	1.70	36.96	41.67	41.13	38.02	40.09
2000 Q2	12	49.47	2.69	45.28	52.64	51.54	46.13	49.74
2000 Q3	12	47.07	1.12	44.80	48.93	46.69	47.94	47.11
2000 Q4	12	39.88	0.87	37.97	40.82	39.66	39.68	39.67
2001 Q1	11	42.20	1.15	39.22	43.65	42.48	39.31	41.42
2001 Q2	11	50.20	1.93	47.21	52.53	52.03	47.46	50.51
2001 Q3	11	49.04	2.54	44.35	51.37	51.05	46.44	49.51
2001 Q4	11	38.25	1.56	36.67	42.08	37.62	39.20	38.15
2002 Q1	11	40.08	1.36	38.85	42.92	39.72	38.05	39.16
2002 Q2	11	37.26	2.57	35.45	43.29	35.86	42.89	38.21
2002 Q3	11	35.02	0.48	34.75	36.33	34.75	40.54	34.75
2002 Q4	11	30.64	1.58	26.37	31.94	31.48	28.61	30.52
2003 Q1	11	36.13	0.89	34.49	37.62	36.30	34.10	35.57
2003 Q2	11	44.47	0.93	43.16	46.20	44.12	42.56	43.60
2003 Q3	11	44.14	2.52	42.08	49.26	42.67	41.08	42.14
2003 Q4	11	36.50	1.14	34.83	38.43	36.09	36.00	36.06
2004 Q1	11	42.88	1.16	40.96	45.12	43.64	43.35	43.54
2004 Q2	11	52.48	2.00	49.53	54.28	54.28	48.09	52.21
2004 Q3	11	54.53	2.13	49.32	56.69	56.01	49.71	53.91
2004 Q4	11	52.47	2.04	48.67	55.41	55.41	48.72	53.18
1995 - 2004 Average		42.75	1.73	39.84	45.49	43.10	42.40	42.82

Table 10. Proportion of Advisory Programs above Market Benchmarks, Hogs, 1995 - 2004

Marketing Quarter	Number of Programs	Proportion of Programs Above Benchmark		
		Cash	Empirical	Index
			--- percent ---	
1995 Q1	13	23	38	54
1995 Q2	13	38	46	62
1995 Q3	13	8	31	62
1995 Q4	13	8	38	92
1996 Q1	11	18	73	91
1996 Q2	11	9	55	100
1996 Q3	11	9	55	91
1996 Q4	11	27	64	91
1997 Q1	12	50	75	83
1997 Q2	12	42	75	100
1997 Q3	12	42	58	100
1997 Q4	12	25	8	0
1998 Q1	12	50	25	0
1998 Q2	12	58	33	17
1998 Q3	12	67	25	8
1998 Q4	12	92	42	0
1999 Q1	12	67	42	33
1999 Q2	12	42	58	83
1999 Q3	12	50	25	0
1999 Q4	12	33	42	42
2000 Q1	12	8	33	75
2000 Q2	12	25	50	83
2000 Q3	12	50	42	25
2000 Q4	12	50	50	50
2001 Q1	11	45	82	91
2001 Q2	11	18	55	82
2001 Q3	11	18	64	73
2001 Q4	11	64	36	27
2002 Q1	11	18	91	100
2002 Q2	11	45	18	9
2002 Q3	11	45	45	0
2002 Q4	11	9	82	91
2003 Q1	11	27	82	100
2003 Q2	11	45	91	100
2003 Q3	11	82	91	100
2003 Q4	11	45	73	73
2004 Q1	11	9	27	27
2004 Q2	11	0	45	100
2004 Q3	11	0	64	91
2004 Q4	11	0	55	91
1995 - 2004 Average	464	34	52	62

Note: Average proportions for 1995 - 2004 are computed over a full data set of advisory programs. As a result, averages of individual quarter proportions may not equal the average proportions reported for 1995 - 2004. The cash benchmark price is the Iowa/Minnesota quarterly average price. The index benchmark price consists of the cash benchmark price plus gains/losses associated with a 75% hedged position accumulated over 9-months prior to the marketing quarter. Hedges are lifted once a month throughout the marketing quarter. The empirical benchmark price is the index benchmark price with hedge positions adjusted down to reflect the lower hedge percentages indicated in quarterly average marketing profiles for advisors.

Table 11. Pricing Performance Results for Individual Market Advisory Programs versus the Cash Market Benchmark Price, Hogs, 1995 - 2004

Market Advisory Program	Number of Quarters	Average Net Advisory Price	Average Cash Benchmark Price	Difference Between Individual Program and Cash Benchmark: Average	Difference Between Individual Program and Cash Benchmark: Standard Deviation	*t*-statistic	Two-tail *p*-value
			---$ per cwt.---	---$ per cwt.---			
Ag Review	40	42.33	43.10	-0.77 **	1.68	-2.89	0.01
AgLine	40	42.24	43.10	-0.86 *	2.72	-2.00	0.05
AgResource	40	43.08	43.10	-0.03	1.33	-0.12	0.91
AgriVisor (aggressive hedge)	40	42.92	43.10	-0.18	1.68	-0.69	0.49
AgriVisor (basic hedge)	40	42.99	43.10	-0.11	1.56	-0.45	0.65
Brock	40	42.23	43.10	-0.88 **	2.03	-2.73	0.01
Pro Farmer	40	43.05	43.10	-0.06	2.40	-0.15	0.89
Stewart-Peterson	40	42.09	43.10	-1.01 *	2.98	-2.14	0.04
Top Farmer	40	43.48	43.10	0.38	3.15	0.76	0.45

Note: Two stars indicates significance at the one percent level and one star indicates significance at the five percent level. The cash benchmark is the Iowa/Minnesota quarterly average price.

Table 12. Pricing Performance Results for Individual Market Advisory Programs versus the Index Market Benchmark Price, Hogs, 1995 - 2004

Market Advisory Program	Number of Quarters	Average Net Advisory Price	Average Index Benchmark Price	Difference Between Individual Program and Index Benchmark: Average	Difference Between Individual Program and Index Benchmark: Standard Deviation	*t*-statistic	Two-tail *p*-value
			---$ per cwt.---	---$ per cwt.---			
Ag Review	40	42.33	42.40	-0.06	3.89	-0.10	0.92
AgLine	40	42.24	42.40	-0.15	3.04	-0.32	0.75
AgResource	40	43.08	42.40	0.68	3.61	1.20	0.24
AgriVisor (aggressive hedge)	40	42.92	42.40	0.52	3.56	0.93	0.36
AgriVisor (basic hedge)	40	42.99	42.40	0.60	3.55	1.06	0.29
Brock	40	42.23	42.40	-0.17	3.29	-0.33	0.75
Pro Farmer	40	43.05	42.40	0.65	3.08	1.34	0.19
Stewart-Peterson	40	42.09	42.40	-0.30	4.28	-0.45	0.66
Top Farmer	40	43.48	42.40	1.08 **	2.68	2.56	0.01

Note: Two stars indicates significance at the one percent level and one star indicates significance at the five percent level. The index benchmark price consists of the cash benchmark price plus gains/losses associated with a 75% hedged position accumulated over 9-months prior to the marketing quarter. Hedges are lifted once a month throughout the marketing quarter.

Table 13. Pricing Performance Results for Individual Market Advisory Programs versus the Empirical Market Benchmark Price, Hogs, 1995 - 2004

Market Advisory Program	Number of Quarters	Average Net Advisory Price	Average Empirical Benchmark Price	Difference Between Individual Program and Empirical Benchmark: Average	Difference Between Individual Program and Empirical Benchmark: Standard Deviation	*t*-statistic	Two-tail *p*-value
			---$ per cwt.---	---$ per cwt.---			
Ag Review	40	42.33	42.82	-0.49	1.82	-1.71	0.10
AgLine	40	42.24	42.82	-0.58	2.07	-1.77	0.08
AgResource	40	43.08	42.82	0.25	1.29	1.25	0.22
AgriVisor (aggressive hedge)	40	42.92	42.82	0.10	1.50	0.40	0.69
AgriVisor (basic hedge)	40	42.99	42.82	0.17	1.40	0.75	0.46
Brock	40	42.23	42.82	-0.60 *	1.63	-2.33	0.03
Pro Farmer	40	43.05	42.82	0.22	1.78	0.79	0.43
Stewart-Peterson	40	42.09	42.82	-0.73	2.87	-1.61	0.12
Top Farmer	40	43.48	42.82	0.65	2.27	1.83	0.08

Note: Two stars indicates significance at the one percent level and one star indicates significance at the five percent level. The empirical benchmark price is the index benchmark price with hedge positions adjusted down to reflect the lower hedge percentages indicated in quarterly average marketing profiles for advisors.

Table 14. Correlation Coefficients for Advisory Programs Active in All Forty Marketing Quarters, 1995 - 2004

Panel A: Prices

	Advisory Program								
Advisory Program	Ag Review	AgLine by Doane	AgResource	AgriVisor (aggressive hedge)	AgriVisor (basic hedge)	Brock	Pro Farmer	Stewart-Peterson	Top Farmer Intelligence
Ag Review	1.00								
AgLine by Doane	0.95	1.00							
AgResource	0.98	0.96	1.00						
AgriVisor (aggressive hedge)	0.97	0.96	0.98	1.00					
AgriVisor (basic hedge)	0.97	0.96	0.98	1.00	1.00				
Brock	0.97	0.97	0.98	0.98	0.98	1.00			
Pro Farmer	0.95	0.96	0.97	0.97	0.97	0.95	1.00		
Stewart-Peterson	0.94	0.92	0.94	0.93	0.93	0.95	0.90	1.00	
Top Farmer Intelligence	0.95	0.91	0.94	0.93	0.93	0.93	0.92	0.93	1.00
Average	0.95								

Panel B: Dollar Difference

Ag Review	1.00								
AgLine	0.10	1.00							
AgResource	0.17	0.49	1.00						
AgriVisor (aggressive hedge)	0.15	0.46	0.36	1.00					
AgriVisor (basic hedge)	0.15	0.46	0.33	0.99	1.00				
Brock	0.28	0.67	0.53	0.53	0.51	1.00			
Pro Farmer	0.22	0.23	0.18	0.12	0.10	0.47	1.00		
Stewart-Peterson	0.22	0.23	0.18	0.12	0.10	0.47	1.00	1.00	
Top Farmer Intelligence	0.38	0.39	0.46	0.32	0.33	0.38	0.46	0.46	1.00
Average	0.36								

Table 15. Significance Tests of the Difference Between an Average Advisory Program and Market Benchmarks, Hogs, 1995 - 2004

Production Quarter	Number of Programs	Difference Between Advisors and Benchmarks		
		Cash	Empirical	Index
		---$ per cwt---		
1995 Q1	13	-0.65	-0.64	-0.62
1995 Q2	13	-0.32	-0.25	-0.11
1995 Q3	13	-1.76	-0.94	0.69
1995 Q4	13	-1.23	-0.25	1.71
1996 Q1	11	-0.53	-0.08	0.84
1996 Q2	11	-2.65	-0.37	4.19
1996 Q3	11	-2.43	-0.52	3.30
1996 Q4	11	-1.34	-0.47	1.94
1997 Q1	12	0.29	0.40	0.60
1997 Q2	12	-0.29	0.87	3.19
1997 Q3	12	-0.49	0.36	2.05
1997 Q4	12	-0.69	-1.87	-4.23
1998 Q1	12	1.30	-0.53	-4.19
1998 Q2	12	0.72	0.11	-1.11
1998 Q3	12	1.38	-0.85	-5.31
1998 Q4	12	3.38	0.15	-6.30
1999 Q1	12	1.01	-0.03	-2.12
1999 Q2	12	0.60	0.77	1.10
1999 Q3	12	0.86	-1.09	-5.00
1999 Q4	12	-0.67	-0.62	-0.51
2000 Q1	12	-1.81	-0.78	1.30
2000 Q2	12	-2.07	-0.27	3.34
2000 Q3	12	0.38	-0.04	-0.87
2000 Q4	12	0.22	0.21	0.20
2001 Q1	11	-0.28	0.78	2.89
2001 Q2	11	-1.84	-0.31	2.74
2001 Q3	11	-2.01	-0.47	2.60
2001 Q4	11	0.63	0.11	-0.94
2002 Q1	11	0.36	0.92	2.03
2002 Q2	11	1.40	-0.94	-5.63
2002 Q3	11	0.27	0.27	-5.52
2002 Q4	11	-0.84	0.12	2.03
2003 Q1	11	-0.17	0.56	2.02
2003 Q2	11	0.35	0.88	1.92
2003 Q3	11	1.53	2.06	3.12
2003 Q4	11	0.58	0.61	0.68
2004 Q1	11	-0.85	-0.75	-0.56
2004 Q2	11	-2.18	-0.12	4.01
2004 Q3	11	-1.80	0.30	4.51
2004 Q4	11	-3.32	-1.09	3.38
"Average" Service	116	-0.37	-0.10	0.33
Standard Deviation		1.34	3.05	0.71
t-statistic		-1.38	0.62	-0.53
Two-tail p-value		0.18	0.54	0.60

Table 16. Average Net Advisory Prices and Standard Deviations, Hogs, 1995 - 2004

Market Advisory Program	1995 - 2004 40-Quarter Average	1995 - 2004 40-Quarter Standard Deviation
	---$/cwt.---	
Ag Review	42.33	9.06
AgLine	42.24	7.44
AgResource	43.08	8.45
AgriVisor (aggressive hedge)	42.92	8.24
AgriVisor (basic hedge)	42.99	8.29
Brock	42.23	8.04
Pro Farmer	43.05	7.71
Stewart-Peterson	42.09	8.80
Top Farmer	43.48	7.79
Benchmarks		
Cash Benchmark	43.10	9.10
Index Benchmark	42.40	6.44
Empirical Benchmark	42.82	8.13

Note: N/A denotes not applicable, which implies that the program did not exist or was not evaluated for the all of the marketing quarters listed.

Table 17. Predictability of Market Advisory Program Performance by Rank Between Adjacent Pairs of Marketing Quarters, Hogs, 1995 - 2004Marketing Quarters

			Hogs
Quarter ***t***	**Quarter** ***t+1***		**Rank**
1995Q1	1995Q2	Correlation Coefficient	0.37
		z -statistic	1.35
		Two-tail *p* -value	0.18
1995Q2	1995Q3	Correlation Coefficient	0.31
		z -statistic	1.13
		Two-tail *p* -value	0.26
1995Q3	1995Q4	Correlation Coefficient	0.60 *
		z -statistic	2.18
		Two-tail *p* -value	0.03
1995Q4	1996Q1	Correlation Coefficient	0.39
		z -statistic	1.25
		Two-tail *p* -value	1.25
1996Q1	1996Q2	Correlation Coefficient	-0.18
		z -statistic	-0.60
		Two-tail *p* -value	0.55
1996Q2	1996Q3	Correlation Coefficient	0.77 **
		z -statistic	2.56
		Two-tail *p* -value	0.01
1996Q3	1996Q4	Correlation Coefficient	0.46
		z -statistic	1.54
		Two-tail *p* -value	0.12
1996Q4	1997Q1	Correlation Coefficient	0.06
		z -statistic	0.21
		Two-tail *p* -value	0.83
1997Q1	1997Q2	Correlation Coefficient	0.06
		z -statistic	0.22
		Two-tail *p* -value	0.83
1997Q2	1997Q3	Correlation Coefficient	0.46
		z -statistic	1.60
		Two-tail *p* -value	0.11
1997Q3	1997Q4	Correlation Coefficient	0.68 *
		z -statistic	2.35
		Two-tail *p* -value	0.02
1997Q4	1998Q1	Correlation Coefficient	0.02
		z -statistic	0.07
		Two-tail *p* -value	0.94
1998Q1	1998Q2	Correlation Coefficient	0.20
		z -statistic	0.70
		Two-tail *p* -value	0.48
1998Q2	1998Q3	Correlation Coefficient	0.55
		z -statistic	1.89
		Two-tail *p* -value	0.06
1998Q3	1998Q4	Correlation Coefficient	0.29
		z -statistic	0.99
		Two-tail *p* -value	0.32
1998Q4	1999Q1	Correlation Coefficient	0.44
		z -statistic	1.53
		Two-tail *p* -value	0.13
1999Q1	1999Q2	Correlation Coefficient	0.29
		z -statistic	1.02
		Two-tail *p* -value	0.31
1999Q2	1999Q3	Correlation Coefficient	0.55
		z -statistic	1.89
		Two-tail *p* -value	0.06
1999Q3	1999Q4	Correlation Coefficient	-0.30
		z -statistic	-1.04
		Two-tail *p* -value	0.30

Table 17, Continued

Quarter *t*	Quarter *t+1*		Hogs Rank
1999Q4	2000Q1	Correlation Coefficient	0.04
		z -statistic	0.15
		Two-tail *p* -value	0.88
2000Q1	2000Q2	Correlation Coefficient	0.57*
		z -statistic	1.99
		Two-tail *p* -value	0.05
2000Q2	2000Q3	Correlation Coefficient	-0.10
		z -statistic	-0.34
		Two-tail *p* -value	0.73
2000Q3	2000Q4	Correlation Coefficient	0.44
		z -statistic	1.53
		Two-tail *p* -value	0.13
2000Q4	2001Q1	Correlation Coefficient	0.80**
		z -statistic	2.65
		Two-tail *p* -value	0.01
2001Q1	2001Q2	Correlation Coefficient	0.06
		z -statistic	0.21
		Two-tail *p* -value	0.83
2001Q2	2001Q3	Correlation Coefficient	0.60 *
		z -statistic	1.99
		Two-tail *p* -value	0.05
2001Q3	2001Q4	Correlation Coefficient	0.08
		z -statistic	0.27
		Two-tail *p* -value	0.79
2001Q4	2002Q1	Correlation Coefficient	0.36
		z -statistic	1.21
		Two-tail *p* -value	0.23
2002Q1	2002Q2	Correlation Coefficient	0.28
		z -statistic	0.93
		Two-tail *p* -value	0.35
2002Q2	2002Q3	Correlation Coefficient	0.55
		z -statistic	1.81
		Two-tail *p* -value	0.07
2002Q3	2002Q4	Correlation Coefficient	-0.04
		z -statistic	-0.12
		Two-tail *p* -value	0.90
2002Q4	2003Q1	Correlation Coefficient	0.48
		z -statistic	1.60
		Two-tail *p* -value	0.11
2003Q1	2003Q2	Correlation Coefficient	0.24
		z -statistic	0.78
		Two-tail *p* -value	0.43
2003Q2	2003Q3	Correlation Coefficient	-0.06
		z -statistic	-0.21
		Two-tail *p* -value	0.83
2003Q3	2003Q4	Correlation Coefficient	0.34
		z -statistic	1.12
		Two-tail *p* -value	0.26
2003Q4	2004Q1	Correlation Coefficient	-0.04
		z -statistic	-0.12
		Two-tail *p* -value	0.90
2004Q1	2004Q2	Correlation Coefficient	0.61 *
		z -statistic	2.02
		Two-tail *p* -value	0.04
2004Q2	2004Q3	Correlation Coefficient	0.72 *
		z -statistic	2.38
		Two-tail *p* -value	0.02
2004Q3	2004Q4	Correlation Coefficient	0.86 **
		z -statistic	2.86
		Two-tail *p* -value	0.00
1995Q1-2004Q4 Average		Correlation Coefficient	0.33

Note: Two stars indicates significance at the one percent level and one star indicates significance at the five percent level.

Table 18. Predictability of Market Advisory Program Performance by Ranks Between Adjacent Marketing Years, Hogs, 1995 - 2004 Marketing Years

			Hogs
Year ***t***	**Year** ***t+1***		**Rank**
1995	1996	Correlation Coefficient	0.01
		z -statistic	0.02
		Two-tail *p* -value	0.98
1996	1997	Correlation Coefficient	0.19
		z -statistic	0.63
		Two-tail *p* -value	0.53
1997	1998	Correlation Coefficient	-0.28
		z -statistic	-0.97
		Two-tail *p* -value	0.33
1998	1999	Correlation Coefficient	0.43
		z -statistic	1.50
		Two-tail *p* -value	0.13
1999	2000	Correlation Coefficient	-0.20
		z -statistic	-0.68
		Two-tail *p* -value	0.50
2000	2001	Correlation Coefficient	0.46
		z -statistic	1.54
		Two-tail *p* -value	0.12
2001	2002	Correlation Coefficient	0.34
		z -statistic	1.12
		Two-tail *p* -value	0.26
2002	2003	Correlation Coefficient	0.37
		z -statistic	1.24
		Two-tail *p* -value	0.22
2003	2004	Correlation Coefficient	-0.26
		z -statistic	-0.87
		Two-tail *p* -value	0.38
	1995-2004 Average	Correlation Coefficient	0.12

Note: Two stars indicates significance at the one percent level and one star

Table 19. Predictability of Market Advisory Program Ranks Between First half and Second half of Marketing Quarters, Hogs, 1995-2004

			Hogs
Quarter ***t***	**Quarter** ***t+1***		**Rank**
1st Half	2nd Half	Correlation Coefficient	0.52
		z -statistic	1.55
		Two-tail p -value	0.12

Note: Two stars indicates significance at the one percent level and one star indicates significance at the five percent level.

Table 20. Predictability of Market Advisory Program Performance by Quantiles Between Pairs of Adjacent Marketing Quarters, Hogs, 1995-2004 Marketing Quarters

	Hogs	
Performance Quantile in Quarter *t*	**Average Price in quarter *t***	**Average Price in quarter *t* +1**
	---$/cwt---	**---$/cwt---**
Top Third	44.29	43.43
Middle Third	42.57	42.93
Bottom Third	40.90	42.33
Top Third minus Bottom Third		
Average	3.39	1.10 **
t -statistic	N/A	4.64
Two-tail *p* -value	N/A	0.00
Top Fourth	44.63	43.54
Second Fourth	43.05	42.94
Third Fourth	42.10	42.86
Bottom Fourth	40.61	42.24
Top Fourth minus Bottom Fourth		
Average	4.02	1.30 **
t -statistic	N/A	4.10
Two-tail *p* -value	N/A	0.00

advisory price in the first quarter of the pair (e.g., t = 1995Q1) and grouping programs by quantiles (thirds and fourths). Next, the average net advisory price for each quantile is computed for the first quarter of the pair. Then, the average net advisory price of the quantiles formed in the first quarter is computed for the second quarter of the pair (e.g., t +1 = 1995Q2) Next, the average net advisory price for the second quarter is averaged across the comparisons. There are a total of 27 comparisons so there are 26 degrees of freedom for the t -test. Some average differences of the top and bottom quantiles may not equal the difference of the averagesfor the quantiles due to rounding. N/A denotes not applicable. Two stars indicates significance at the one percent level and one star indicates significance at the five percent level.

Table 21. Predictability of Market Advisory Program Performance by Quantiles Between Pairs of Adjacent Marketing Years, Hogs, 1995-2004 Marketing Years

	Hogs	
Performance Quantile in Year *t*	**Average Price in year *t***	**Average Price in year *t*+1**
	---$/cwt---	**---$/cwt---**
Top Third	43.05	43.06
Middle Third	41.93	42.90
Bottom Third	40.82	42.68
Top Third minus Bottom Third		
Average	2.23	0.38
t-statistic	N/A	1.73
Two-tail *p*-value	N/A	0.13
Top Fourth	43.33	43.16
Second Fourth	42.20	42.74
Third Fourth	41.63	43.09
Bottom Fourth	40.62	42.60
Top Fourth minus Bottom Fourth		
Average	2.70	0.56
t-statistic	N/A	1.75
Two-tail *p*-value	N/A	0.12

advisory price in the first year of the pair (e.g., t = 1995Q1) and grouping programs by quantiles (thirds and fourths). Next, the average net advisory price for each quantile is computed for the first year of the pair. Then, the average net advisory price of the quantiles formed in the first year is computed for the second year of the pair (e.g., t+1 = 1995Q2) Next, the average net advisory price for the second year is averaged across the comparisons. There are a total of 6 comparisons so there are 5 degrees of freedom for the t-test. Some average differences of the top and bottom quantiles may not equal the difference of the averagesfor the quantiles due to rounding. N/A denotes not applicable. Two stars indicates significance at the one percent level and one star indicates significance at the five percent level.

Table 22. Predictability of Market Advisory Program Performance by Quantiles 1995-1999 vs. 2000-2004, Hogs, 1995-2004 Marketing Years

	Hogs	
Performance Quantile in First half *t*	**Average Price in first half *t***	**Average Price in second half *t* +1**
	---$/cwt---	**---$/cwt---**
Top Third	43.07	43.27
Middle Third	42.32	43.49
Bottom Third	41.69	42.33
Top Third minus Bottom Third Average	1.39	0.93
Top Fourth	43.26	43.41
Second Fourth	42.60	43.29
Third Fourth	42.24	43.50
Bottom Fourth	41.69	42.33
Top Fourth minus Bottom Fourth Average	1.57	1.08

Note: Since there are only two comparisons, t-tests cannot be done.

Figure 1. Distribution of Track Record Lengths for Hog Market Advisory Programs, 1995-2004

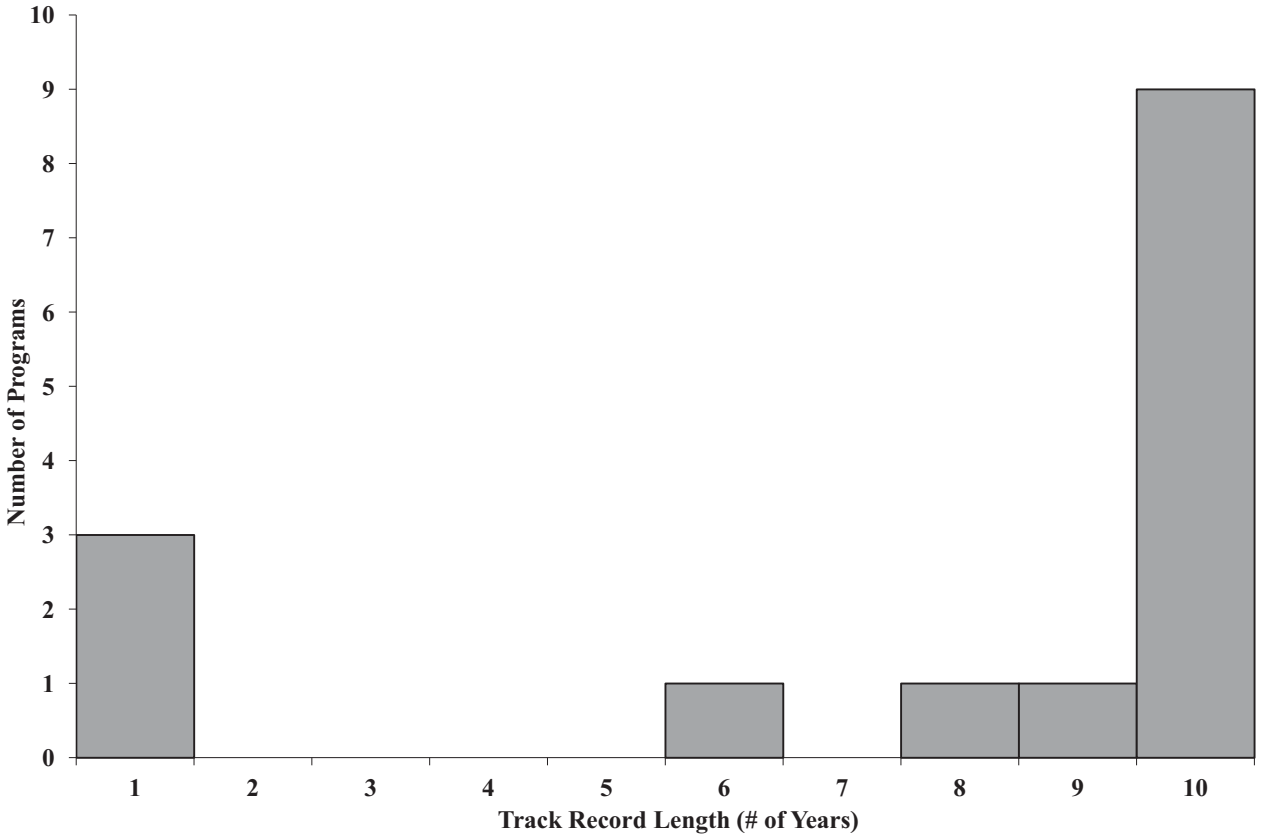


Figure 2. E-V Decision Making Model for Output Hedging Decision

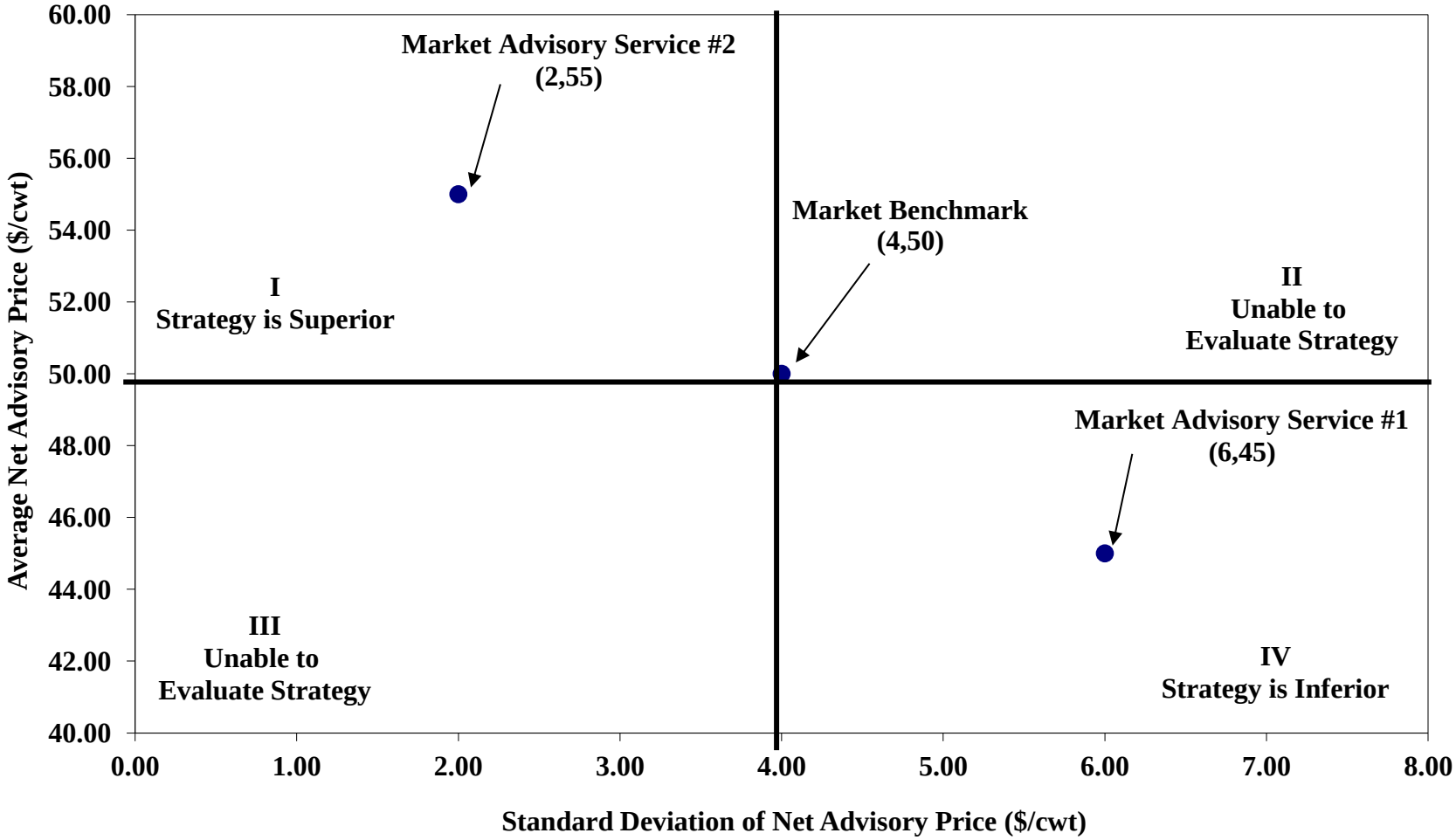


Figure 3. Quarterly Average Hog Marketing Profiles, Ag Profit

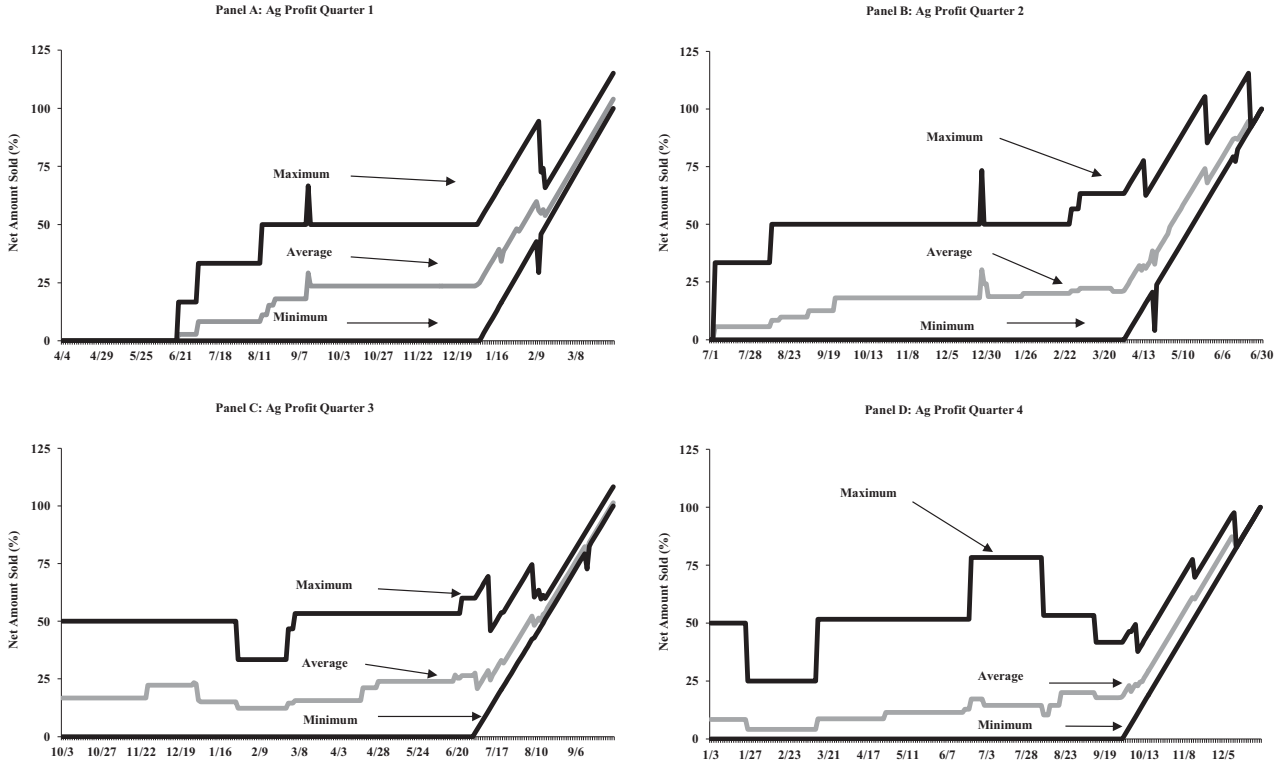


Figure 4. Quarterly Average Hog Marketing Profiles, Ag Review

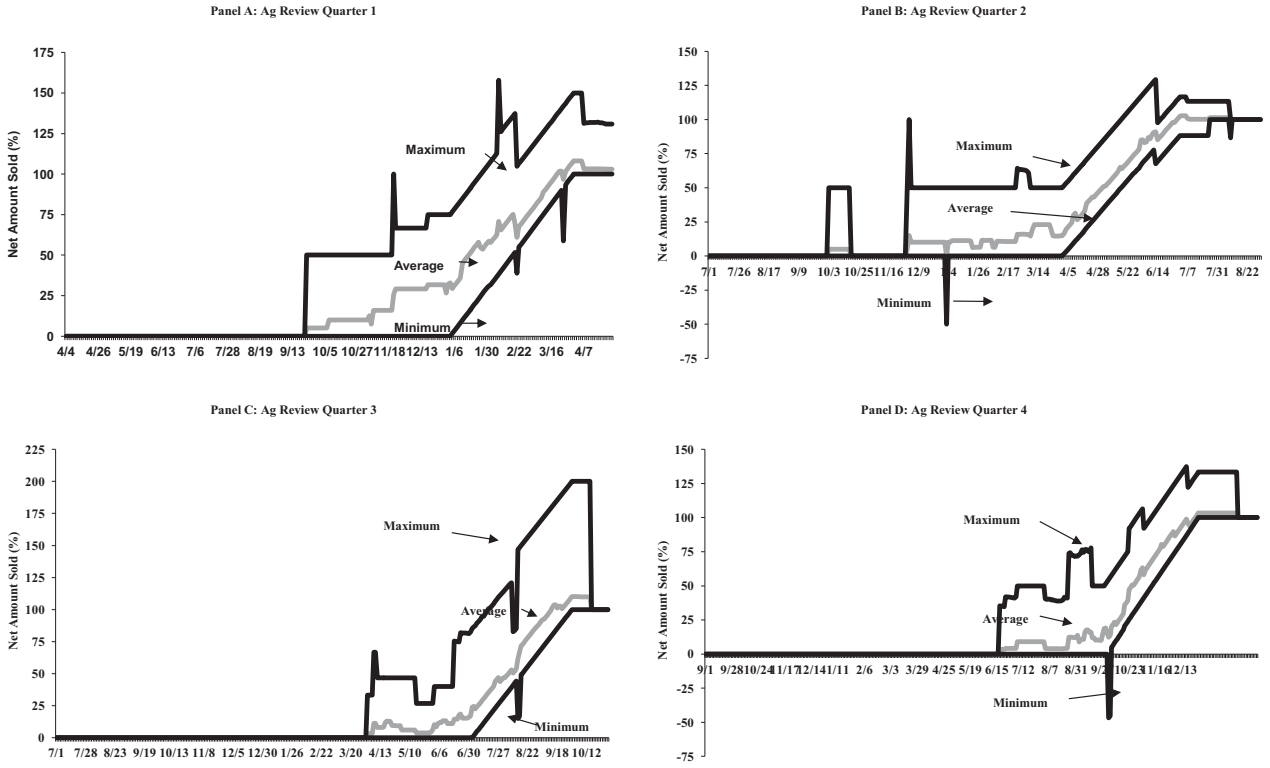


Figure 5. Quarterly Average Hog Marketing Profiles, AgLine by Doane

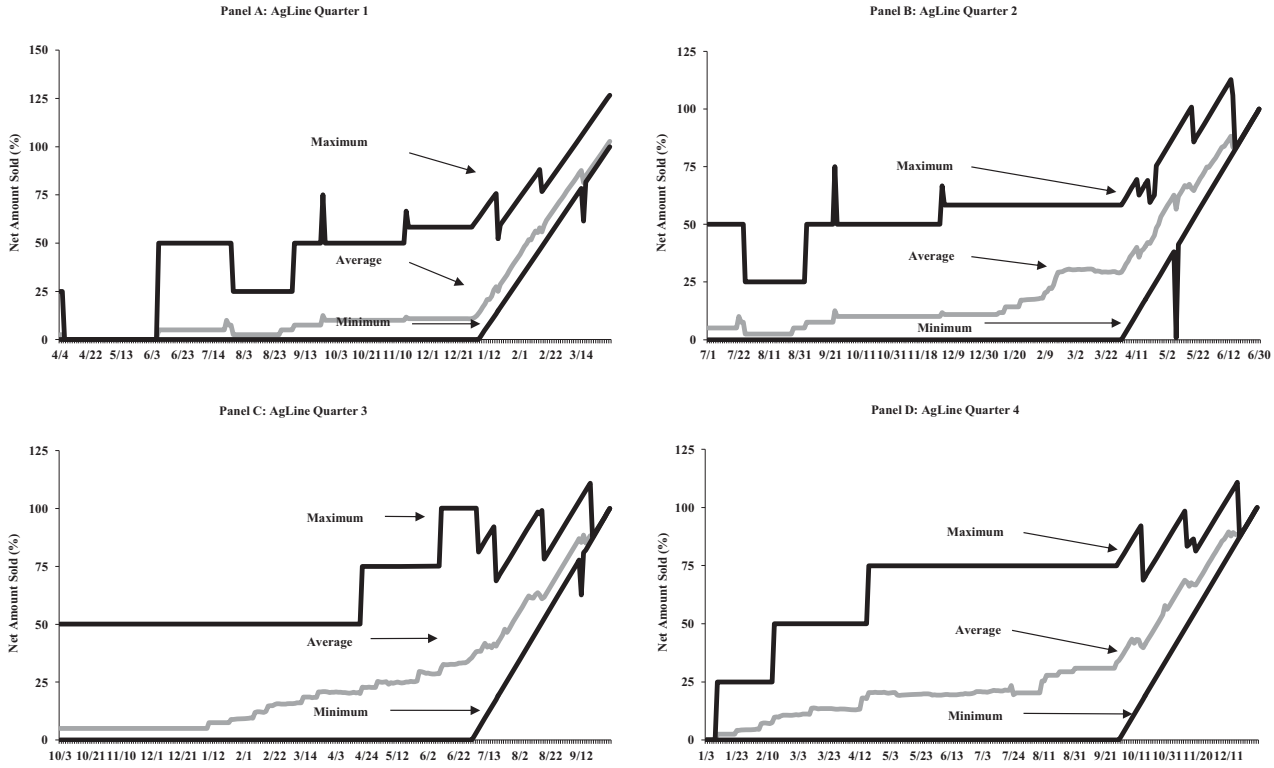


Figure 6. Quarterly Average Hog Marketing Profiles, AgResource

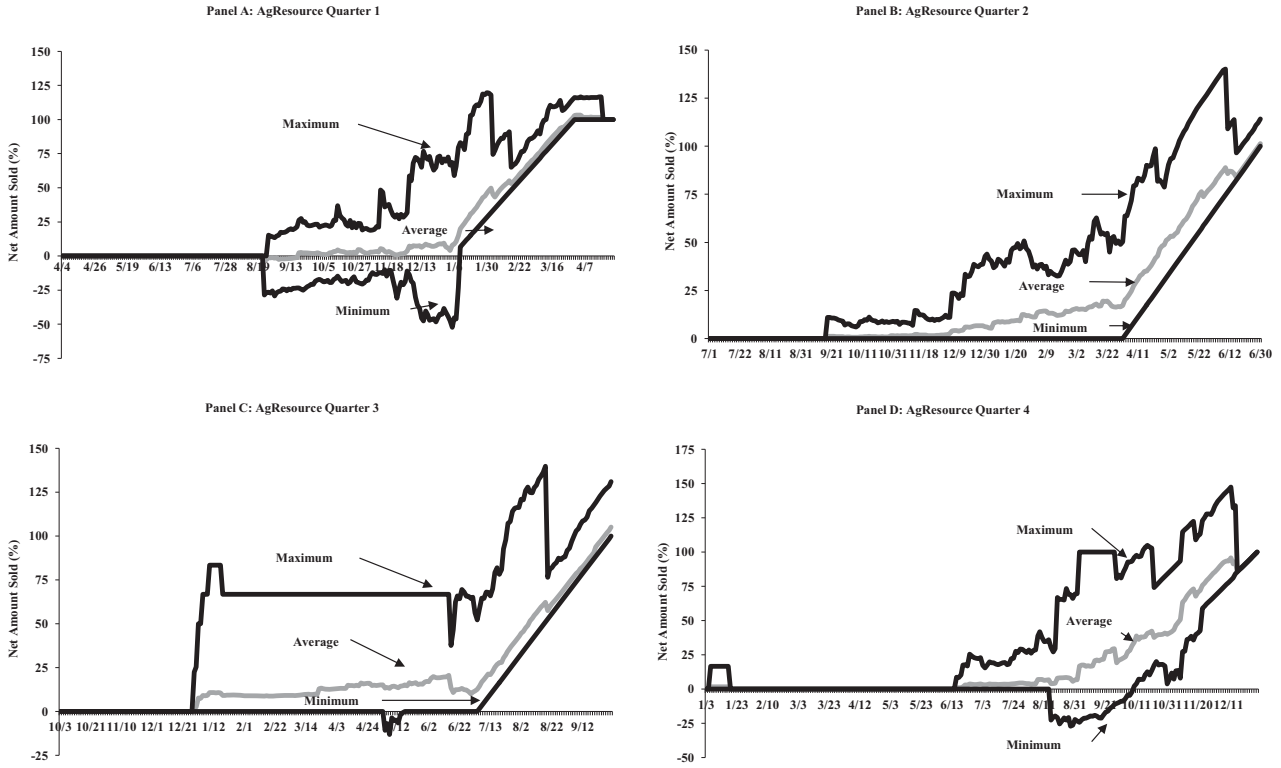


Figure 7. Quarterly Average Hog Marketing Profiles, AgriVisor (aggressive hedge)

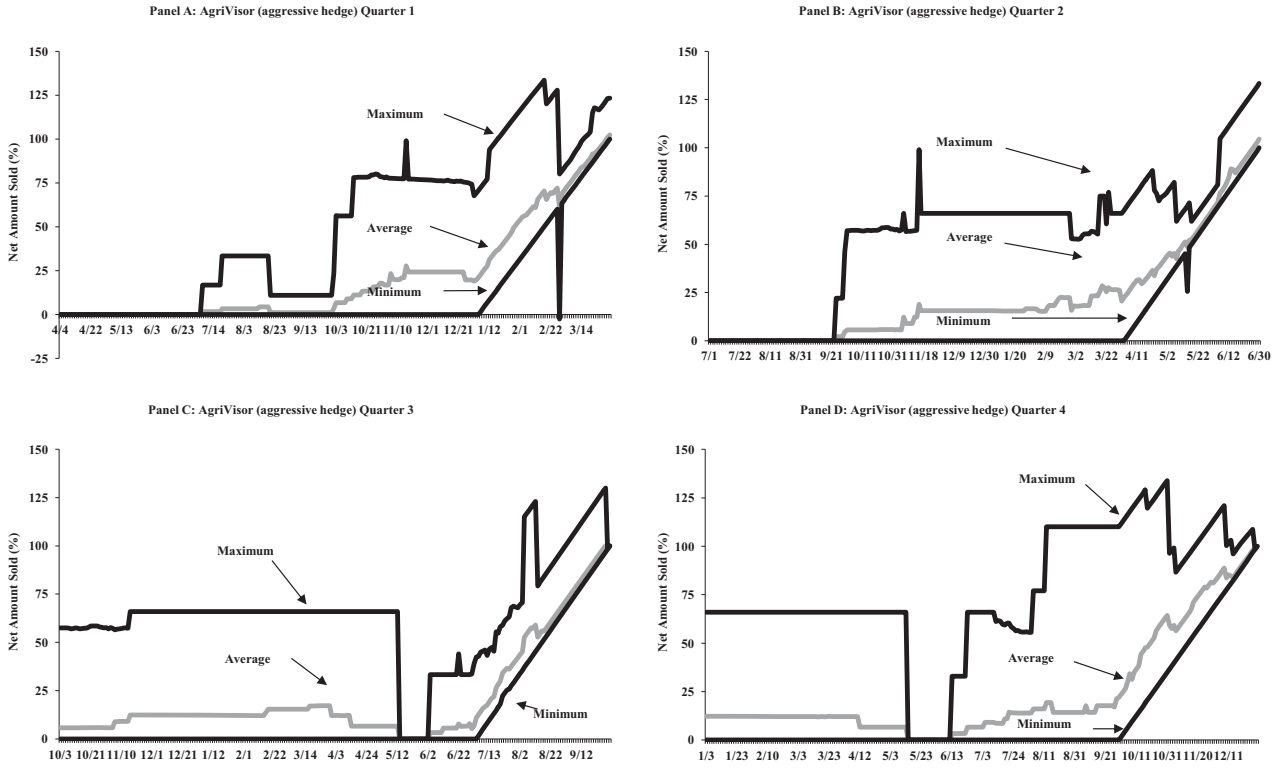


Figure 8. Quarterly Average Hog Marketing Profiles, AgriVisor (basic hedge)

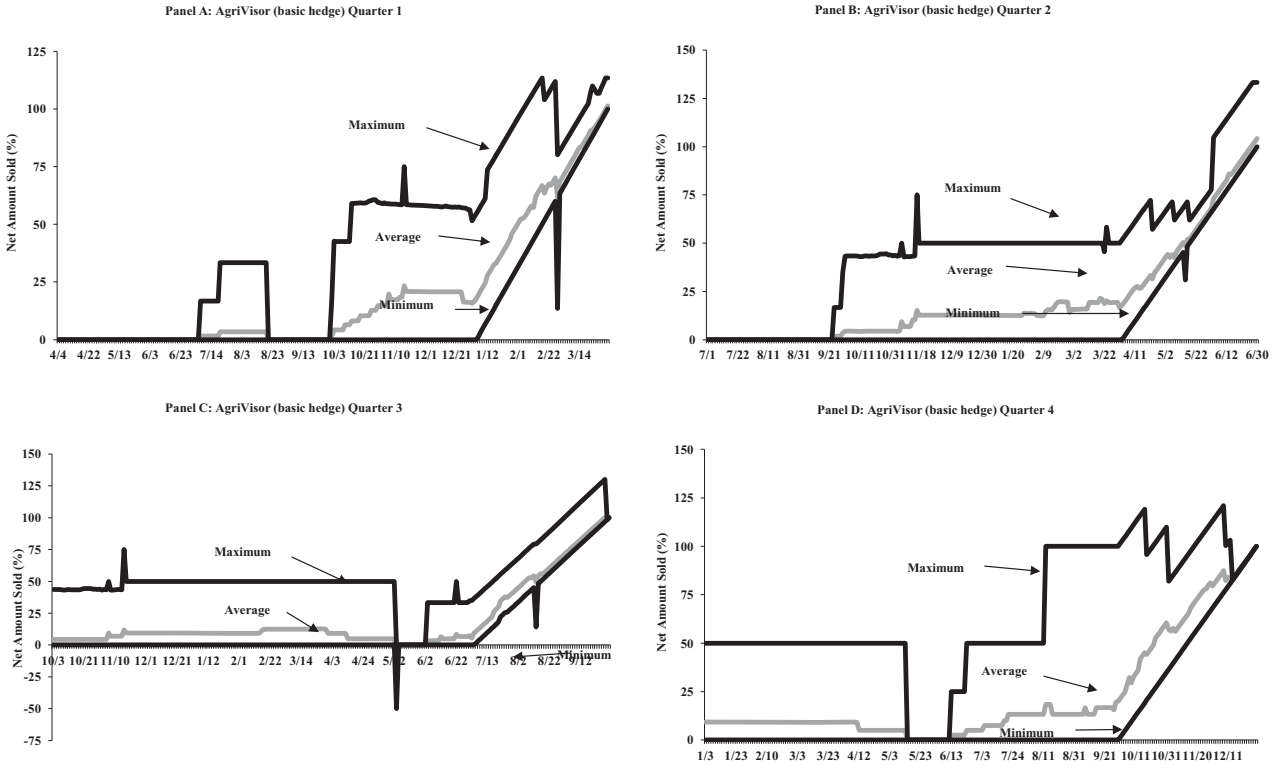


Figure 9. Quarterly Average Hog Marketing Profiles, Brock

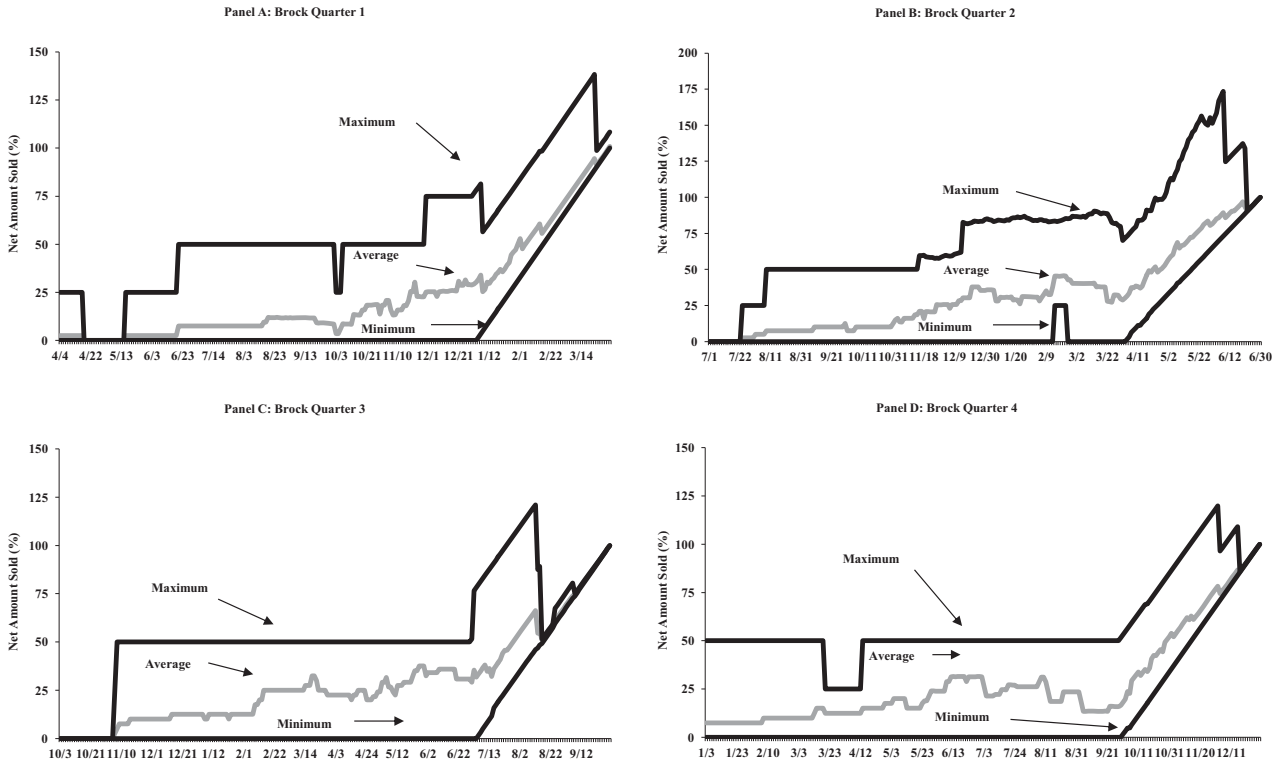


Figure 10. Hog Marketing Profile, Grain Field Report, 1995

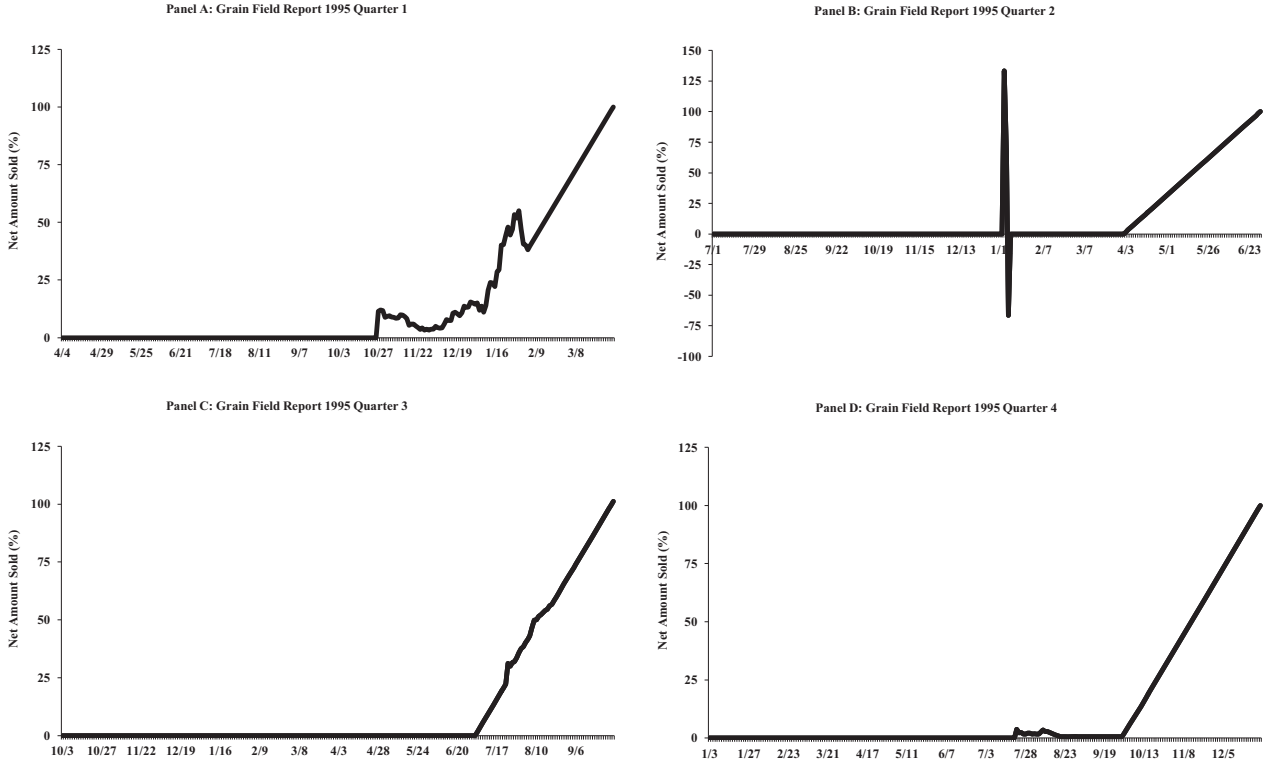


Figure 11. Hog Marketing Profile, North American Ag, 1995

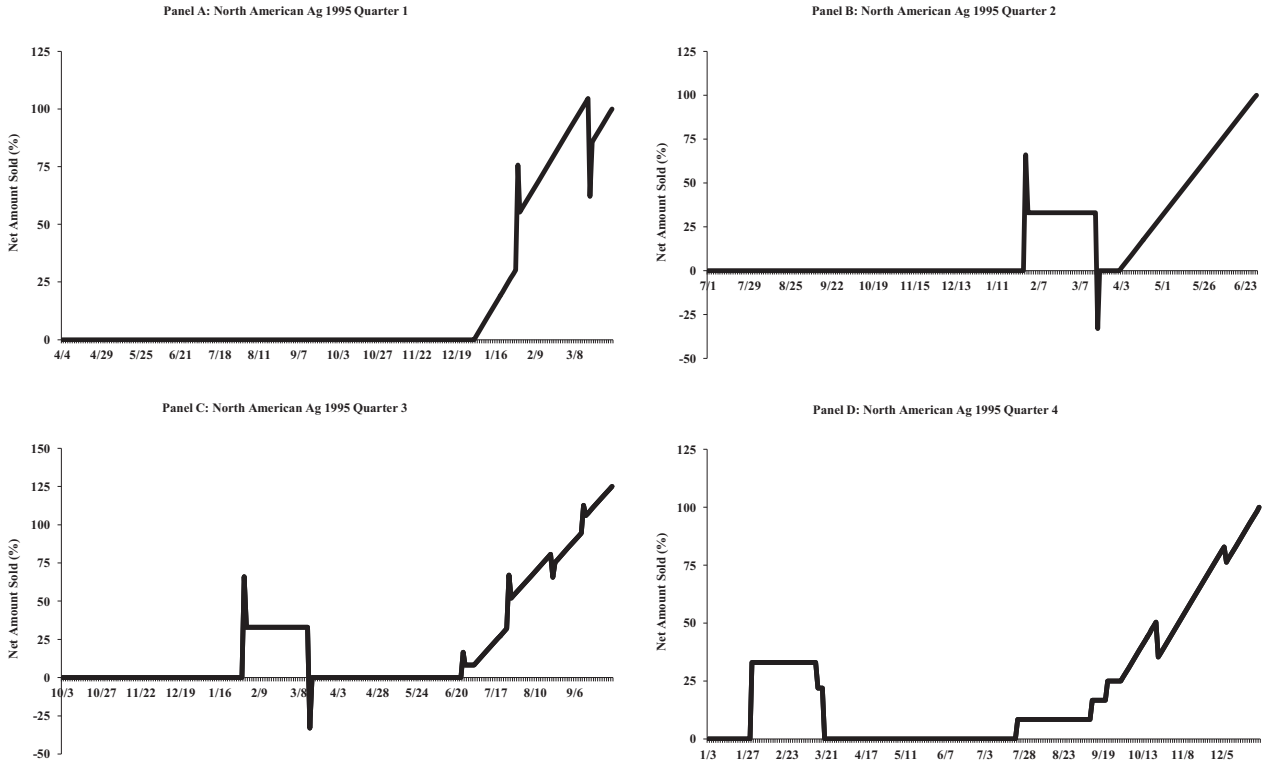


Figure 12. Quarterly Average Hog Marketing Profiles, Pro Farmer

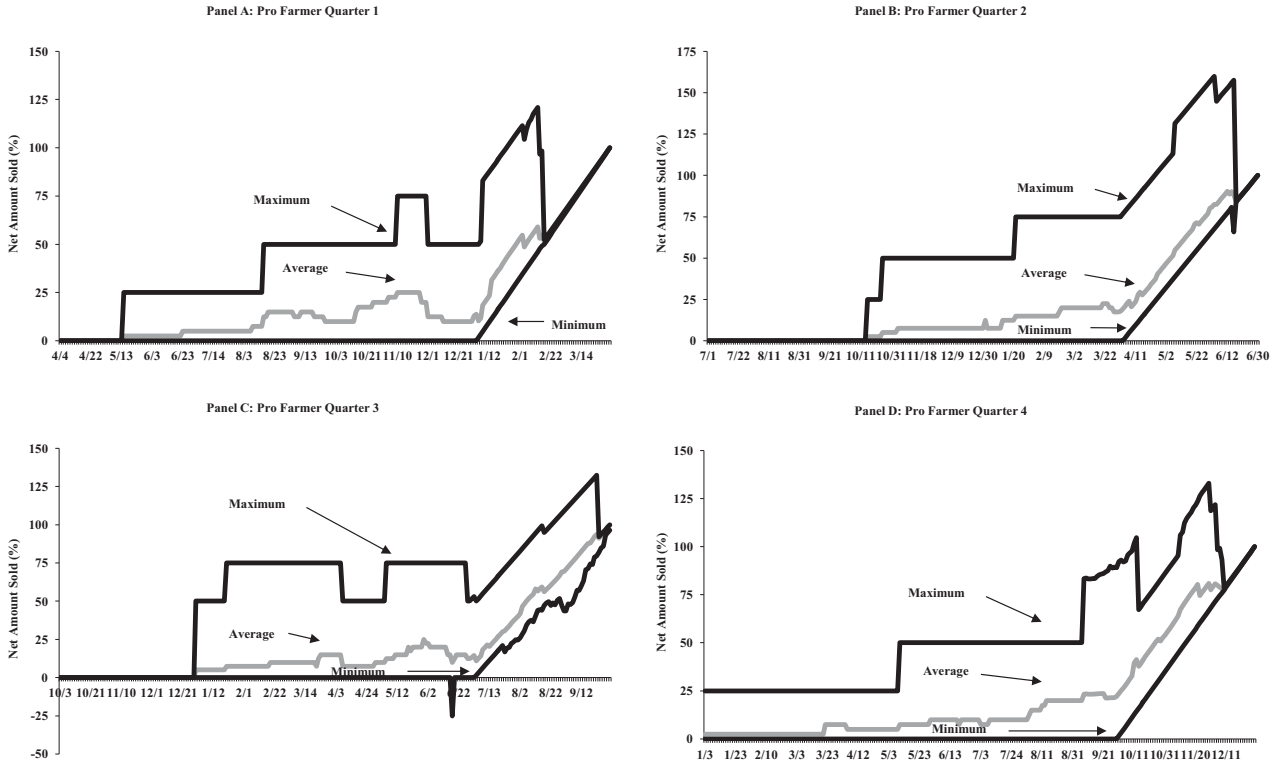


Figure 13. Quarterly Average Hog Marketing Profiles, Progressive Ag

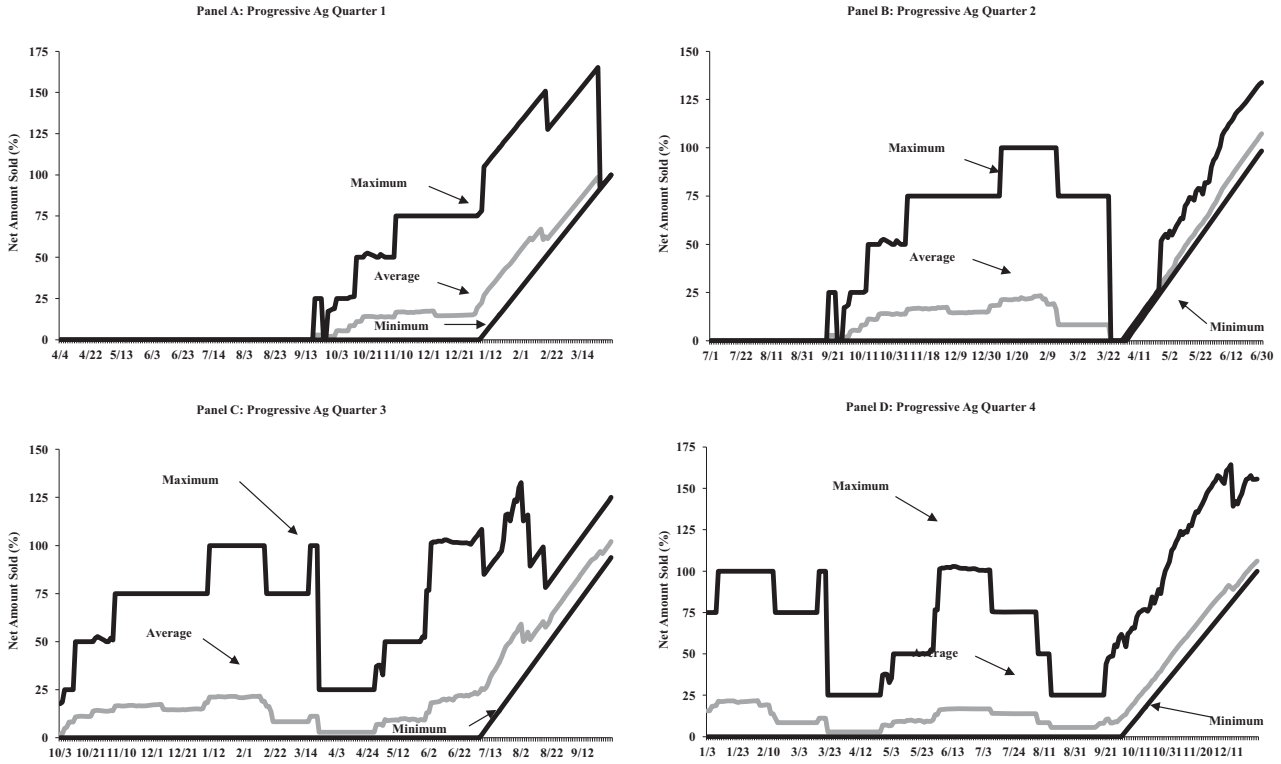


Figure 14. Hog Marketing Profiles, Prosperous Farmer, 1995

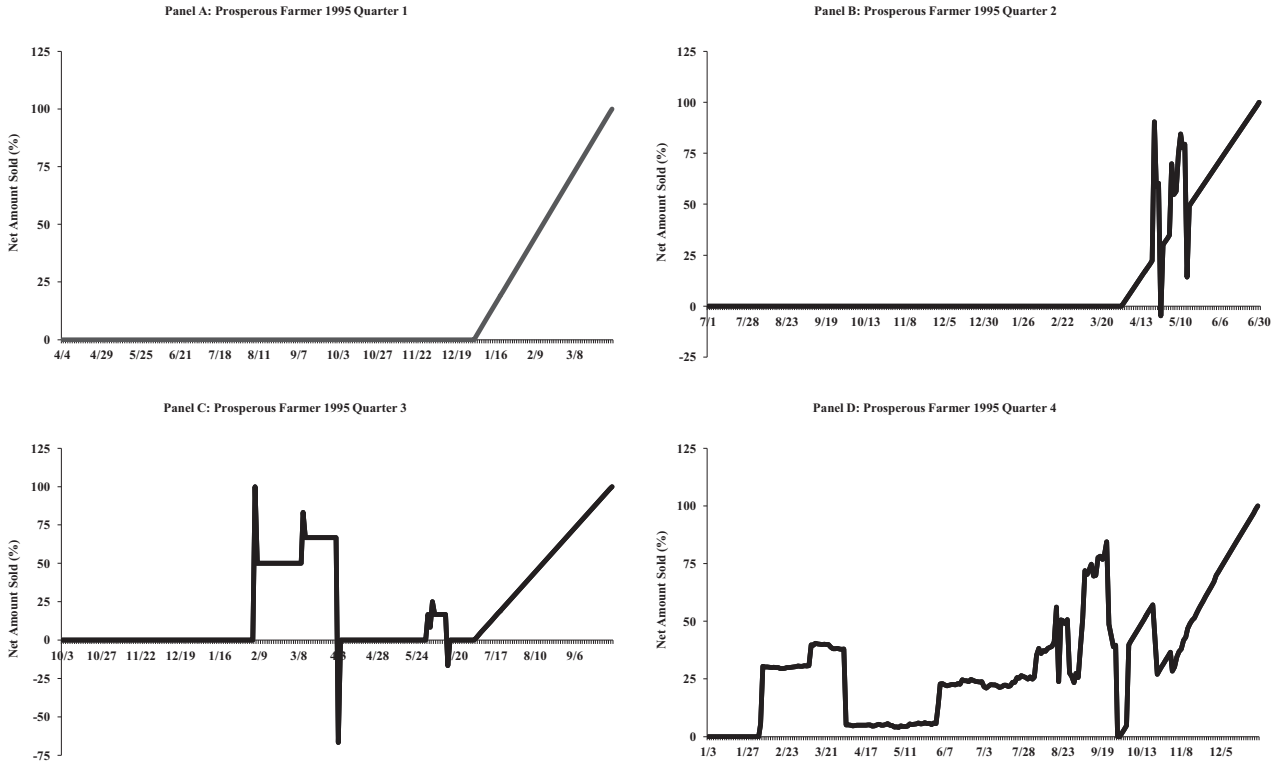


Figure 15. Quarterly Average Hog Marketing Profiles, Stewart-Peterson

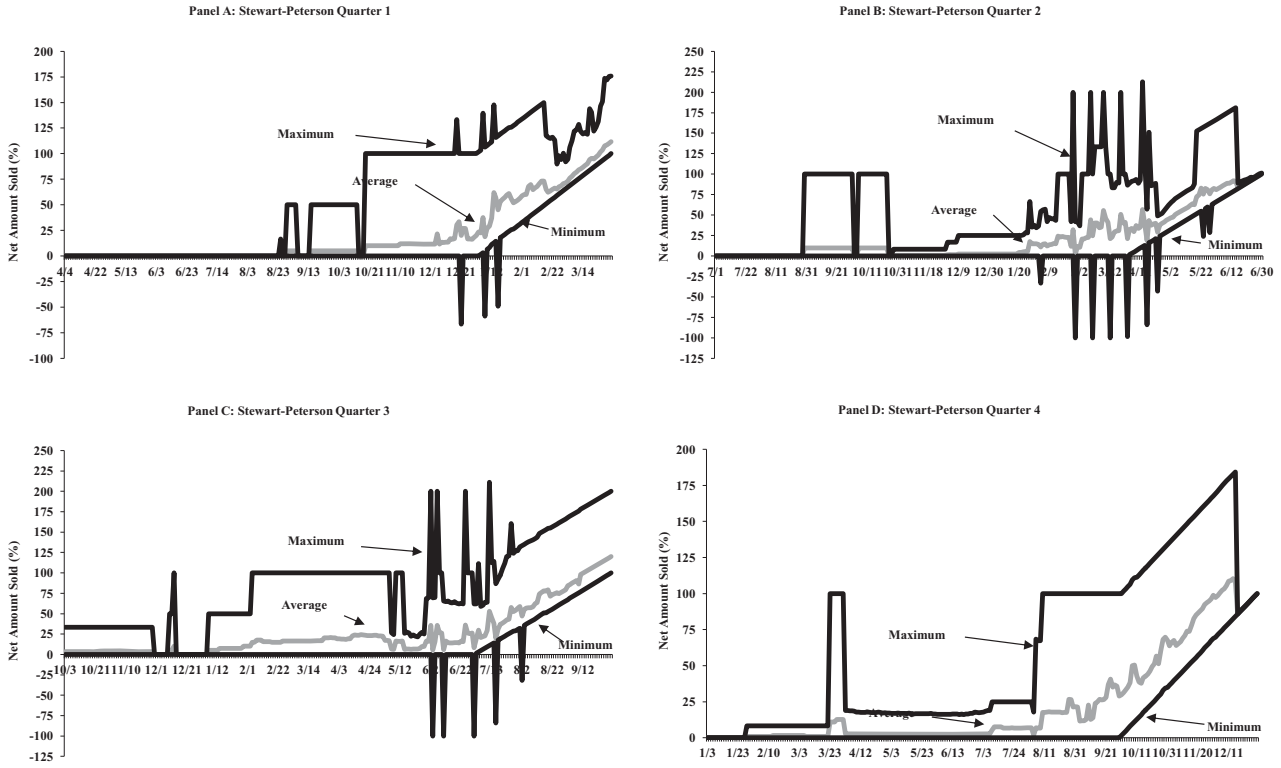


Figure 16. Quarterly Average Hog Marketing Profiles, Top Farmer Intelligence

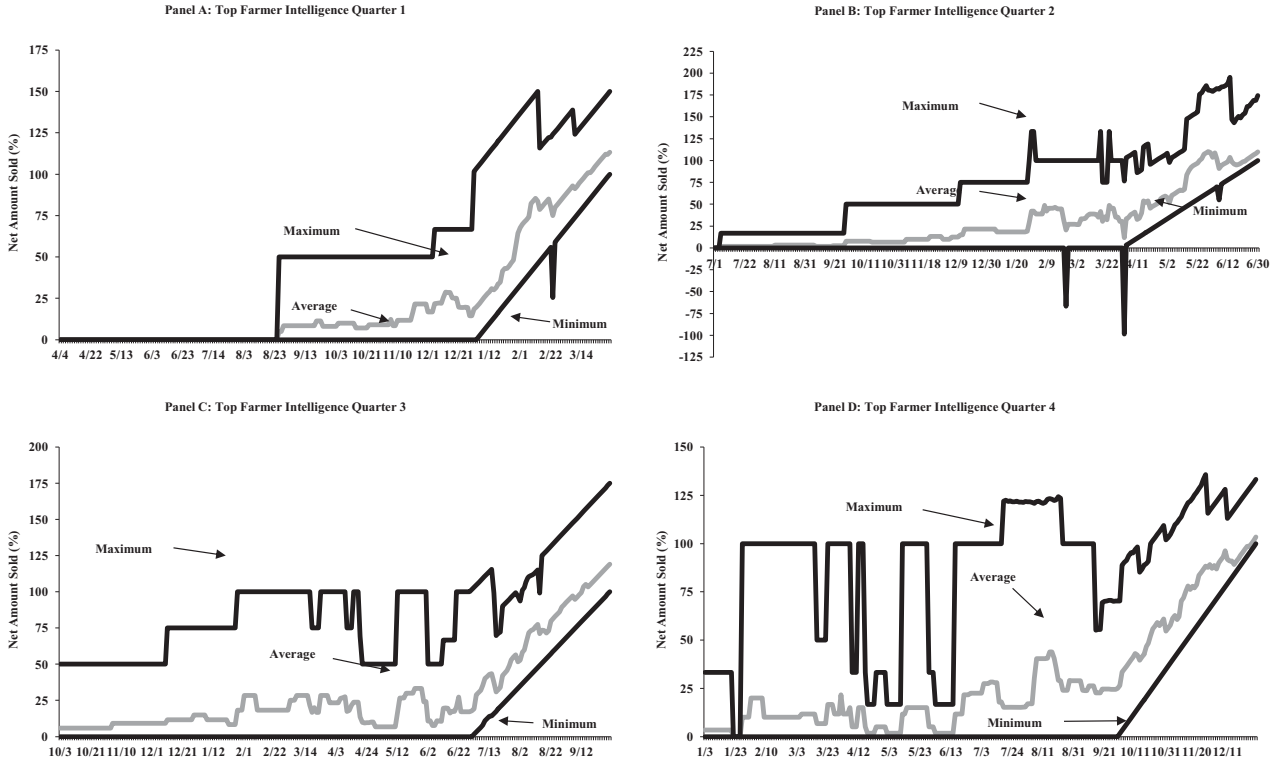


Figure 17. Quarterly Average Hog Marketing Profiles, Utterback Marketing Services

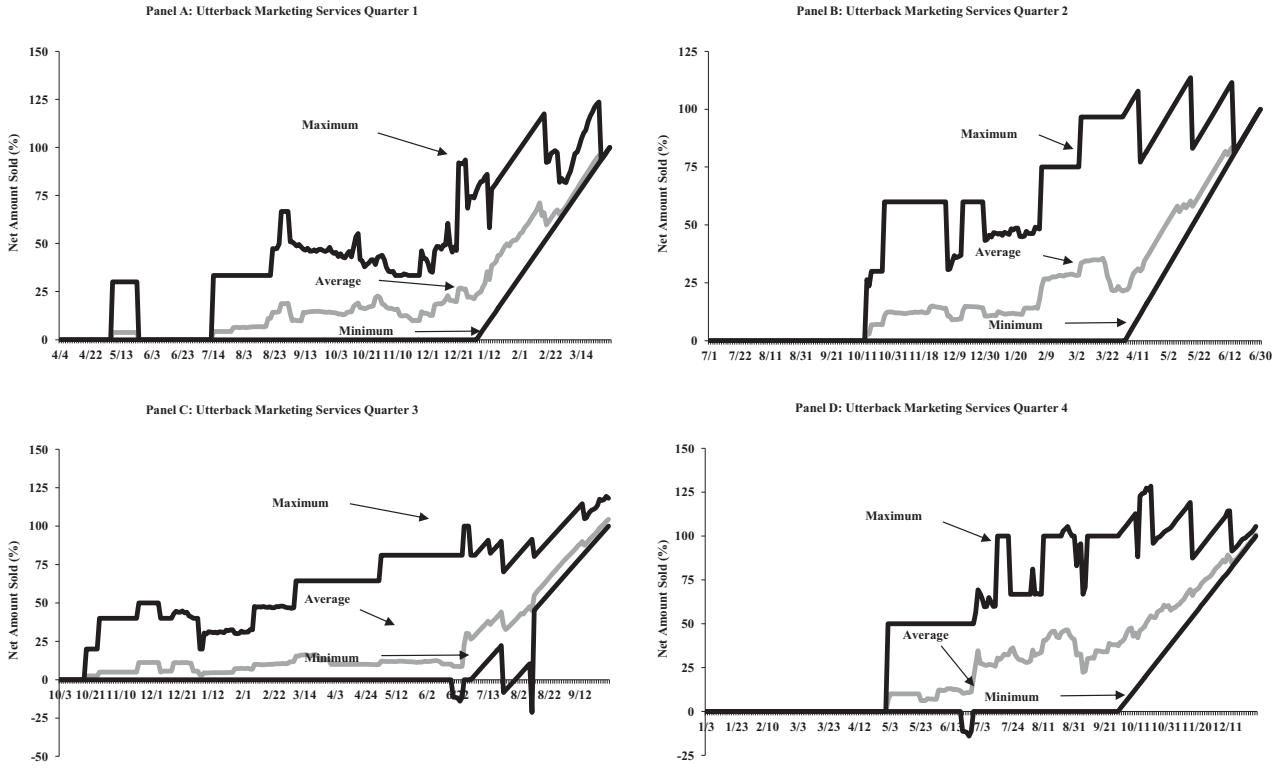


Figure 18. Quarterly Average Hog Marketing Profiles, All Programs Combined, 1995 - 2004

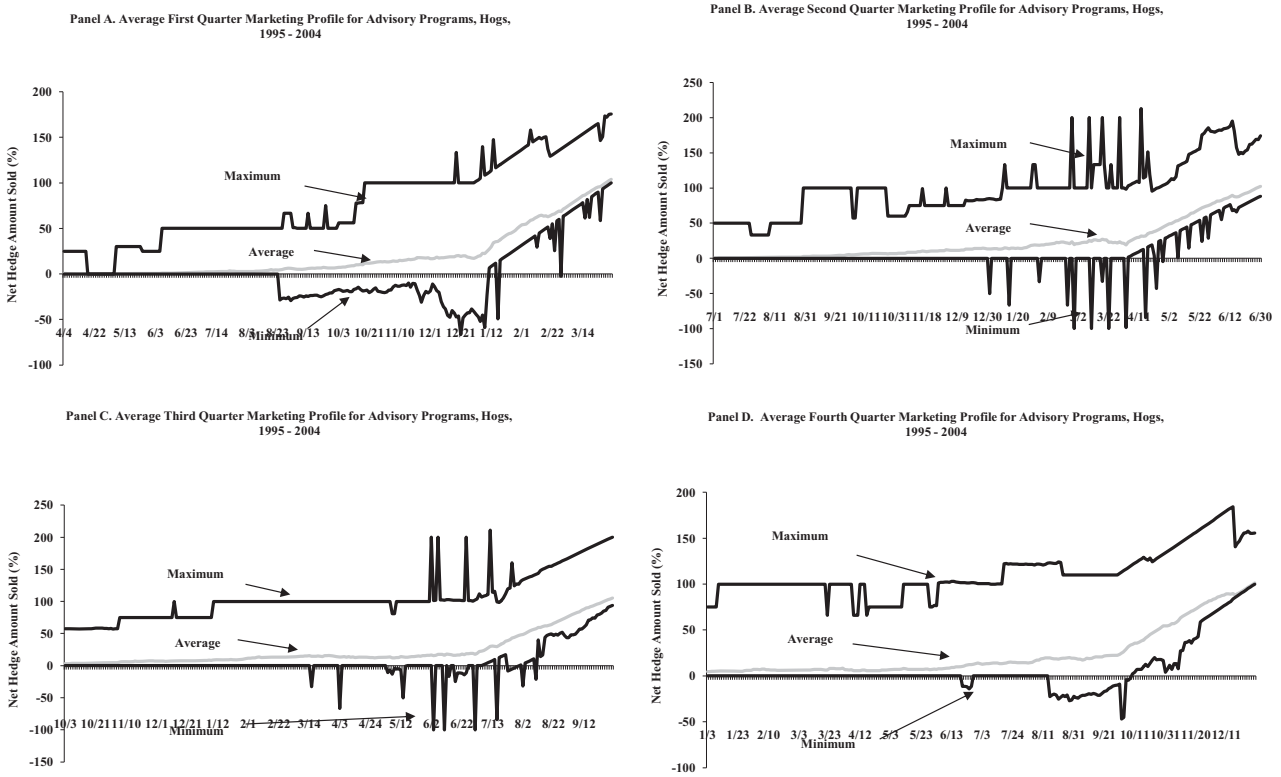
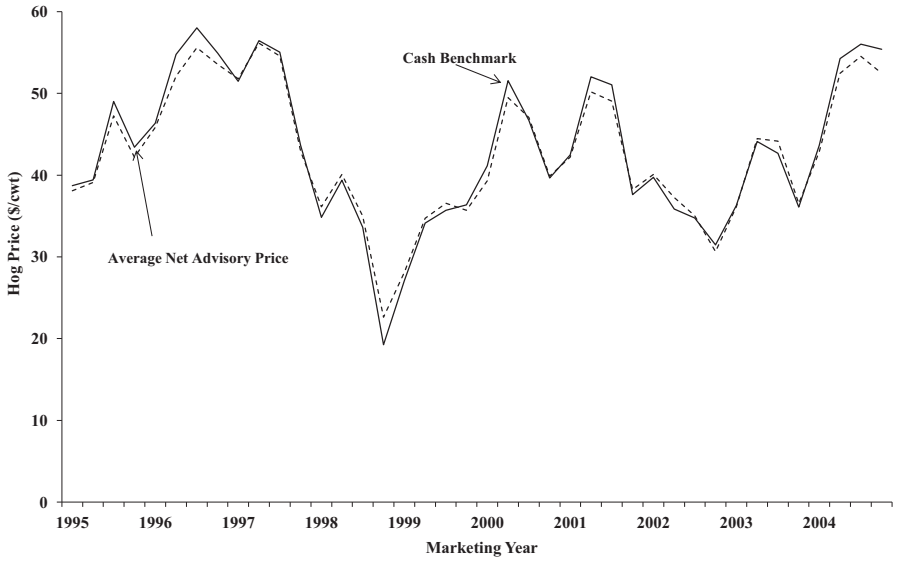


Figure 19. Average Net Advisory Prices and Benchmark Prices, Hogs, 1995 - 2004

Panel A: Average Net Advisory Price vs. Cash Benchmark



Panel B: Average Net Advisory Price vs. Empirical Benchmark

Panel C: Average Net Advisory Price vs. Index Benchmark

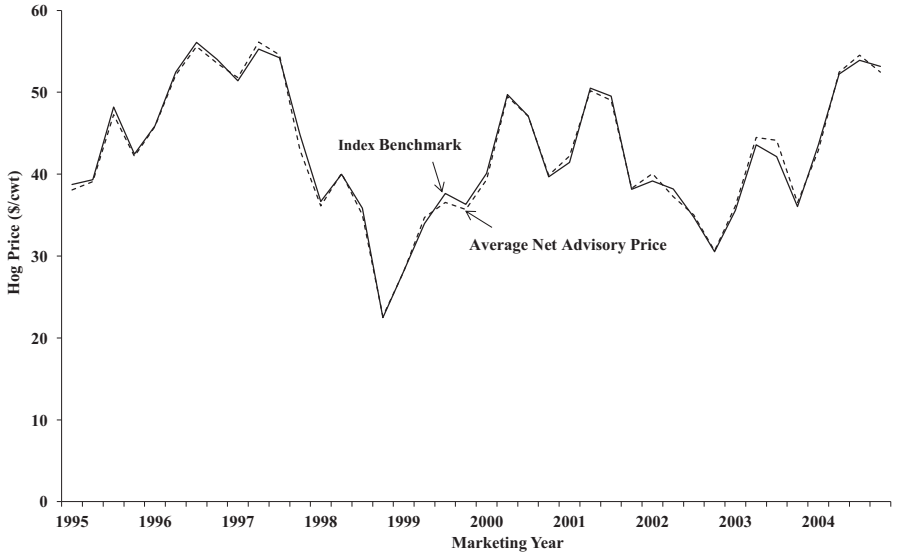
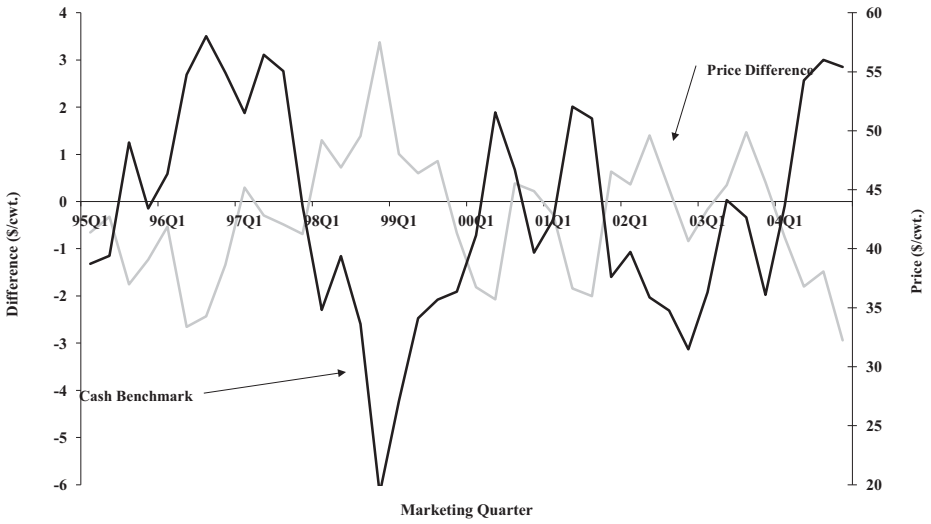
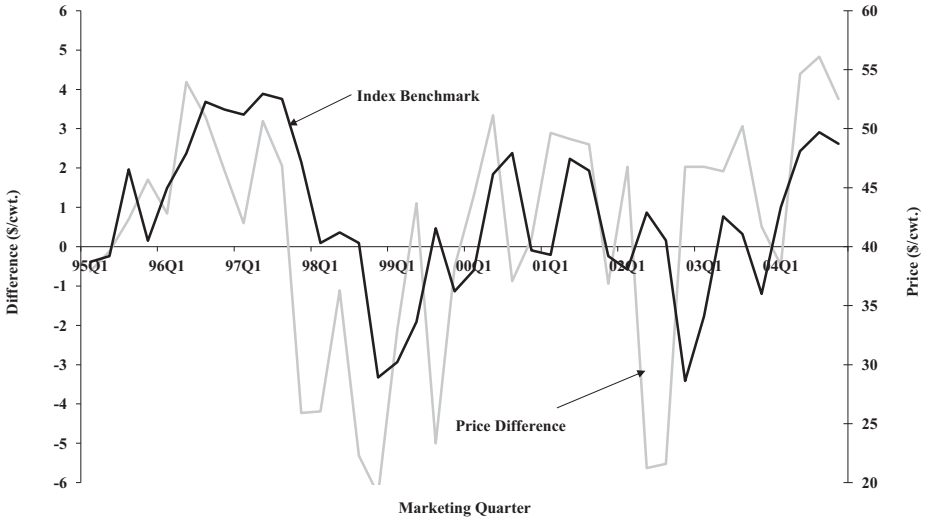


Figure 20. Average Difference Between Advisory Programs and Benchmarks, Hogs, 1995 - 2004

Panel A. Cash Benchmark



Panel B. Index Benchmark



Panel C. Empirical Benchmark

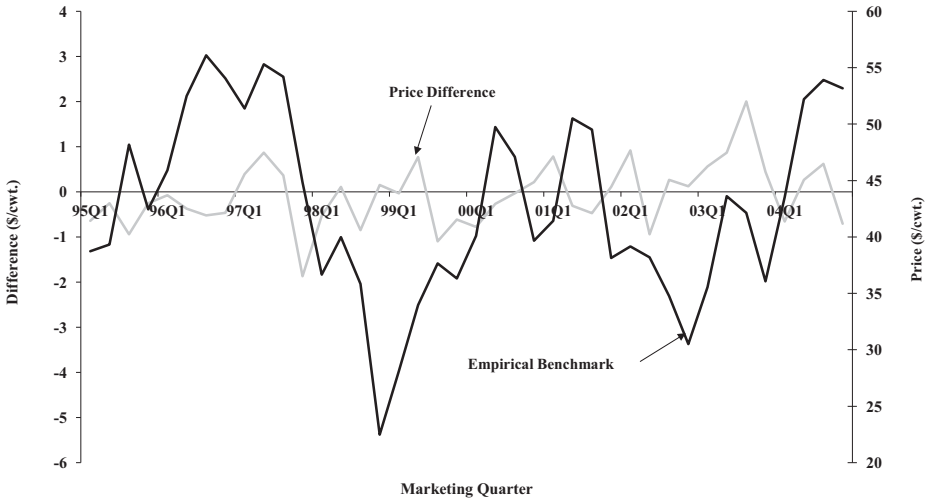
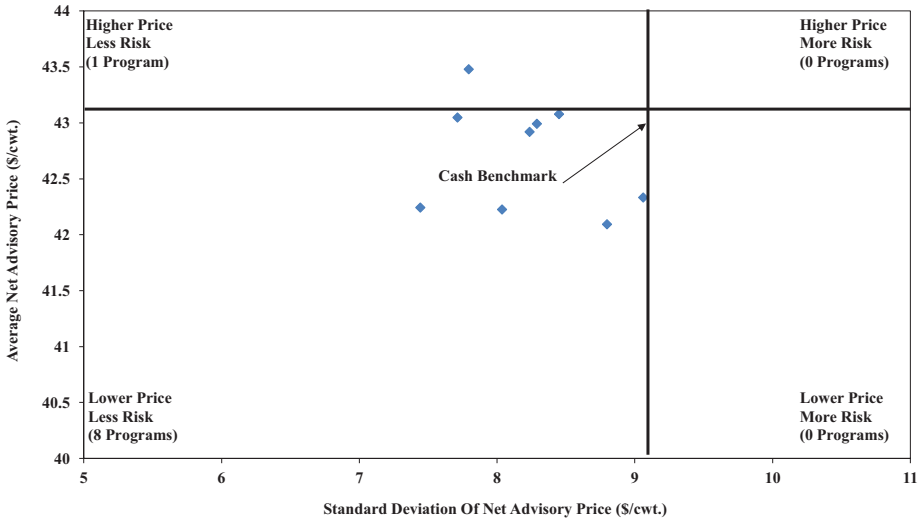
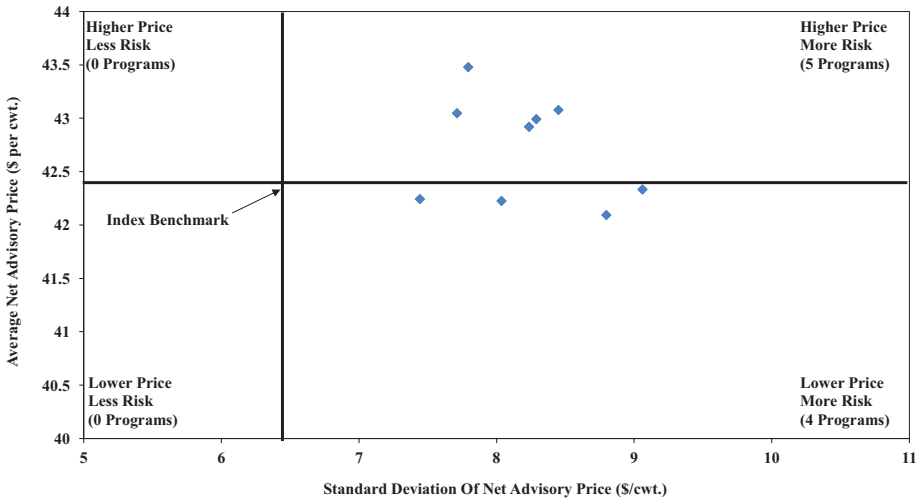


Figure 21. Average Net Advisory Price and Standard Deviation for 9 Advisory Programs versus Benchmarks, Hogs, 1995 - 2004

Panel A. Cash Benchmark



Panel B. Index Benchmark



Panel C. Empirical Benchmark

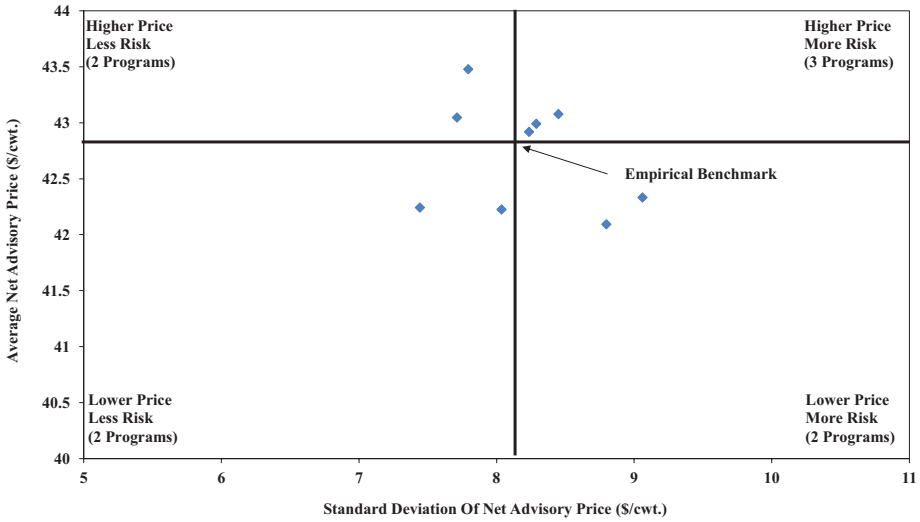


Figure 22. Quarterly Average Cash Price, Hogs, 1973 - 2001

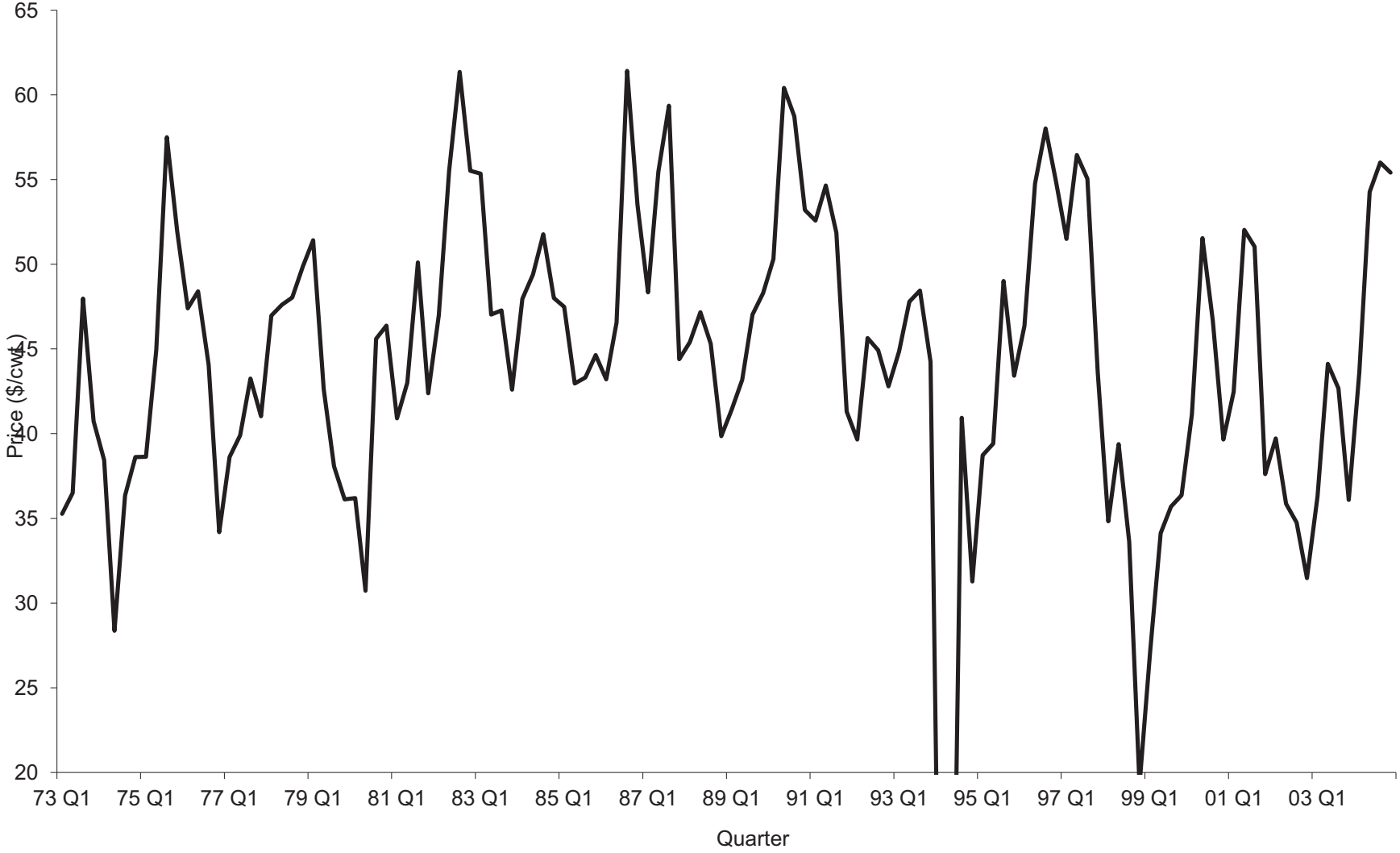


Table A1. Pricing Results for 13 Market Advisory Programs, Hogs, 1995 Quarters 1-4

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #1					
	Ag Profit by Hjort	38.73	0.01	0.04	38.70
	Ag Resource	38.73	0.41	0.23	38.91
	Ag Review	38.73	-2.38	0.10	36.25
	AgLine by Doane	38.73	-0.39	0.16	38.19
	AgriVisor (aggressive hedge)	38.73	-2.24	0.14	36.36
	AgriVisor (basic hedge)	38.73	-1.70	0.10	36.93
	Brock	38.73	-0.08	0.11	38.55
	Grain Field Report	38.73	0.37	0.02	39.07
	North American Ag	38.73	0.00	0.03	38.71
	Pro Farmer	38.73	0.00	0.00	38.73
	Prosperous Farmer	38.73	0.00	0.00	38.73
	Stewart-Peterson	38.73	-1.45	0.25	37.03
	Top Farmer	38.73	0.17	0.04	38.86
	Descriptive Statistics:				
	Average	38.73	-0.56	0.10	38.08
	Standard Deviation	0.00	1.00	0.08	1.04
Quarter #2					
	Ag Profit by Hjort	39.41	0.47	0.05	39.83
	Ag Resource	39.41	1.61	0.20	40.82
	Ag Review	39.41	-2.49	0.08	36.85
	AgLine by Doane	39.41	1.64	0.07	40.97
	AgriVisor (aggressive hedge)	39.41	0.04	0.12	39.33
	AgriVisor (basic hedge)	39.41	0.03	0.09	39.35
	Brock	39.41	-2.56	0.13	36.73
	Grain Field Report	39.41	-0.03	0.13	39.25
	North American Ag	39.41	-0.39	0.03	38.99
	Pro Farmer	39.41	-0.33	0.02	39.06
	Prosperous Farmer	39.41	0.63	0.08	39.96
	Stewart-Peterson	39.41	-2.47	0.96	35.99
	Top Farmer	39.41	1.88	0.27	41.02
	Descriptive Statistics:				
	Average	39.41	-0.15	0.17	39.09
	Standard Deviation	0.00	1.53	0.25	1.63

Table A1, Continued

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #3					
	Ag Profit by Hjort	49.01	-0.52	0.02	48.47
	Ag Resource	49.01	-2.37	0.30	46.34
	Ag Review	49.01	-2.72	0.24	46.05
	AgLine by Doane	49.01	-2.72	0.06	46.23
	AgriVisor (aggressive hedge)	49.01	-1.72	0.16	47.12
	AgriVisor (basic hedge)	49.01	-1.17	0.10	47.74
	Brock	49.01	-4.10	0.13	44.78
	Grain Field Report	49.01	-0.17	0.05	48.79
	North American Ag	49.01	-0.46	0.08	48.46
	Pro Farmer	49.01	-1.26	0.07	47.67
	Prosperous Farmer	49.01	0.69	0.10	49.59
	Stewart-Peterson	49.01	-2.34	0.58	46.09
	Top Farmer	49.01	-1.61	0.46	46.94
	Descriptive Statistics:				
	Average	49.01	-1.57	0.18	47.25
	Standard Deviation	0.00	1.29	0.17	1.36
Quarter #4					
	Ag Profit by Hjort	43.42	-0.94	0.05	42.44
	Ag Resource	43.42	0.85	0.28	44.00
	Ag Review	43.42	-2.15	0.23	41.05
	AgLine by Doane	43.42	-2.36	0.06	41.01
	AgriVisor (aggressive hedge)	43.42	-0.83	0.27	42.33
	AgriVisor (basic hedge)	43.42	-0.97	0.22	42.23
	Brock	43.42	-1.49	0.06	41.87
	Grain Field Report	43.42	-0.08	0.02	43.32
	North American Ag	43.42	-0.03	0.07	43.32
	Pro Farmer	43.42	-0.49	0.06	42.87
	Prosperous Farmer	43.42	0.07	0.33	43.16
	Stewart-Peterson	43.42	-1.59	0.75	41.09
	Top Farmer	43.42	-2.96	0.59	39.87
	Descriptive Statistics:				
	Average	43.42	-1.00	0.23	42.20
	Standard Deviation	0.00	1.09	0.22	1.18
	Yearly Statistics:				
	Average Cash Price	42.64			
	Average Net Advisory Price	41.65			
	Standard Deviation	3.83			

Note: To obtain net advisory price, add (1) + (2) - (3). Cash prices are the Iowa/Minnesota adjusted quarterly cash prices.

Table A2. Pricing Results for 11 Market Advisory Programs, Hogs, 1996 Quarters 1-4

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #1					
	Ag Profit by Hjort	46.36	-0.83	0.04	45.48
	Ag Resource	46.36	1.16	0.15	47.37
	Ag Review	46.36	-0.29	0.09	45.98
	AgLine by Doane	46.36	-0.37	0.02	45.97
	AgriVisor (aggressive hedge)	46.36	-0.40	0.03	45.93
	AgriVisor (basic hedge)	46.36	-0.28	0.02	46.06
	Brock	46.36	0.28	0.03	46.60
	Pro Farmer	46.36	-0.26	0.09	46.01
	Progressive Ag	46.36	0.00	0.00	46.36
	Stewart-Peterson Advisory Repo	46.36	-3.17	0.46	42.73
	Top Farmer Intelligence	46.36	-0.64	0.11	45.61
	Descriptive Statistics:				
	Average	46.36	-0.44	0.10	45.83
	Standard Deviation	0.00	1.05	0.13	1.15
Quarter #2					
	Ag Profit by Hjort	54.76	-1.58	0.03	53.14
	Ag Resource	54.76	-4.69	0.15	49.92
	Ag Review	54.76	1.56	0.10	56.21
	AgLine by Doane	54.76	-5.13	0.08	49.54
	AgriVisor (aggressive hedge)	54.76	-1.68	0.09	52.98
	AgriVisor (basic hedge)	54.76	-1.21	0.06	53.49
	Brock	54.76	-5.31	0.14	49.31
	Pro Farmer	54.76	-4.58	0.09	50.09
	Progressive Ag	54.76	-0.21	0.02	54.53
	Stewart-Peterson Advisory Repo	54.76	-3.21	0.45	51.10
	Top Farmer Intelligence	54.76	-1.60	0.29	52.87
	Descriptive Statistics:				
	Average	54.76	-2.51	0.14	52.11
	Standard Deviation	0.00	2.24	0.13	2.27

Table A2, Continued

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #3					
	Ag Profit by Hjort	58.01	-3.04	0.06	54.91
	Ag Resource	58.01	-0.95	0.05	57.02
	Ag Review	58.01	0.57	0.08	58.50
	AgLine by Doane	58.01	-6.84	0.09	51.08
	AgriVisor (aggressive hedge)	58.01	-1.24	0.06	56.71
	AgriVisor (basic hedge)	58.01	-0.93	0.04	57.05
	Brock	58.01	-4.90	0.06	53.05
	Pro Farmer	58.01	-3.22	0.13	54.67
	Progressive Ag	58.01	-0.52	0.06	57.43
	Stewart-Peterson Advisory Repor	58.01	-4.25	0.42	53.34
	Top Farmer Intelligence	58.01	0.00	0.40	57.61
	Descriptive Statistics:				
	Average	58.01	-2.30	0.13	55.58
	Standard Deviation	0.00	2.33	0.14	2.33
Quarter #4					
	Ag Profit by Hjort	54.91	-0.51	0.02	54.38
	Ag Resource	54.91	0.97	0.10	55.78
	Ag Review	54.91	-1.84	0.13	52.95
	AgLine by Doane	54.91	-7.56	0.09	47.26
	AgriVisor (aggressive hedge)	54.91	-0.27	0.15	54.49
	AgriVisor (basic hedge)	54.91	-0.26	0.14	54.51
	Brock	54.91	-3.10	0.07	51.75
	Pro Farmer	54.91	-1.67	0.06	53.18
	Progressive Ag	54.91	0.00	0.00	54.91
	Stewart-Peterson Advisory Repor	54.91	0.31	0.24	54.98
	Top Farmer Intelligence	54.91	0.36	0.19	55.08
	Descriptive Statistics:				
	Average	54.91	-1.23	0.11	53.57
	Standard Deviation	0.00	2.40	0.07	2.39
	Yearly Statistics:				
	Average Cash Price	53.51			
	Average Net Advisory Price	51.77			
	Standard Deviation	4.21			

Note: To obtain net advisory price, add (1) + (2) - (3). Cash prices are the Iowa/Minnesota adjusted quarterly cash prices.

Table A3. Pricing Results for 12 Market Advisory Programs, Hogs, 1997 Quarters 1-4

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #1					
	Ag Profit by Hjort	51.50	0.00	0.00	51.50
	Ag Resource	51.50	0.00	0.00	51.50
	Ag Review	51.50	2.64	0.12	54.02
	AgLine by Doane	51.50	-0.34	0.02	51.13
	AgriVisor (aggressive hedge)	51.50	1.44	0.14	52.80
	AgriVisor (basic hedge)	51.50	1.17	0.10	52.56
	Brock	51.50	0.58	0.19	51.89
	Pro Farmer	51.50	-1.90	0.05	49.55
	Progressive Ag	51.50	-0.04	0.09	51.36
	Stewart-Peterson Advisory Reports	51.50	0.49	0.06	51.93
	Top Farmer Intelligence	51.50	0.02	0.04	51.48
	Utterback	51.50	0.29	0.04	51.75
	Descriptive Statistics:				
	Average	51.50	0.36	0.07	51.79
	Standard Deviation	0.00	1.10	0.06	1.07
Quarter #2					
	Ag Profit by Hjort	56.44	0.51	0.02	56.94
	Ag Resource	56.44	0.00	0.00	56.44
	Ag Review	56.44	0.45	0.10	56.79
	AgLine by Doane	56.44	-0.61	0.02	55.81
	AgriVisor (aggressive hedge)	56.44	-1.95	0.11	54.38
	AgriVisor (basic hedge)	56.44	-1.41	0.07	54.96
	Brock	56.44	-0.73	0.07	55.65
	Pro Farmer	56.44	-2.10	0.07	54.28
	Progressive Ag	56.44	0.43	0.13	56.74
	Stewart-Peterson Advisory Reports	56.44	3.00	0.42	59.03
	Top Farmer Intelligence	56.44	0.66	0.12	56.98
	Utterback	56.44	-0.57	0.05	55.82
	Descriptive Statistics:				
	Average	56.44	-0.19	0.10	56.15
	Standard Deviation	0.00	1.38	0.11	1.31

Table A3, Continued

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #3					
	Ag Profit by Hjort	55.05	0.52	0.03	55.54
	Ag Resource	55.05	0.00	0.00	55.05
	Ag Review	55.05	0.67	0.05	55.68
	AgLine by Doane	55.05	0.00	0.00	55.05
	AgriVisor (aggressive hedge)	55.05	-2.25	0.10	52.70
	AgriVisor (basic hedge)	55.05	-1.70	0.08	53.27
	Brock	55.05	-1.81	0.09	53.15
	Pro Farmer	55.05	1.06	0.06	56.05
	Progressive Ag	55.05	-1.14	0.21	53.70
	Stewart-Peterson Advisory Reports	55.05	0.76	0.12	55.68
	Top Farmer Intelligence	55.05	0.98	0.31	55.73
	Utterback	55.05	-1.71	0.16	53.18
	Descriptive Statistics:				
	Average	55.05	-0.38	0.10	54.57
	Standard Deviation	0.00	1.24	0.09	1.25
Quarter #4					
	Ag Profit by Hjort	43.64	0.00	0.00	43.64
	Ag Resource	43.64	0.00	0.00	43.64
	Ag Review	43.64	0.63	0.02	44.26
	AgLine by Doane	43.64	0.00	0.00	43.64
	AgriVisor (aggressive hedge)	43.64	-2.25	0.10	41.29
	AgriVisor (basic hedge)	43.64	-1.70	0.08	41.86
	Brock	43.64	-0.52	0.09	43.02
	Pro Farmer	43.64	1.89	0.05	45.49
	Progressive Ag	43.64	-1.14	0.21	42.29
	Stewart-Peterson Advisory Reports	43.64	-2.62	0.19	40.84
	Top Farmer Intelligence	43.64	1.19	0.14	44.69
	Utterback	43.64	-2.60	0.28	40.76
	Descriptive Statistics:				
	Average	43.64	-0.59	0.10	42.95
	Standard Deviation	0.00	1.49	0.09	1.55
	Yearly Statistics:				
	Average Cash Price	51.66			
	Average Net Advisory Price	51.36			
	Standard Deviation	5.31			

Note: To obtain net advisory price, add (1) + (2) - (3). Cash prices are the Iowa/Minnesota adjusted quarterly cash prices.

Table A4. Pricing Results for 12 Market Advisory Programs, Hogs, 1998 Quarters 1-4

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #1					
	Ag Profit by Hjort	34.82	0.00	0.00	34.82
	Ag Resource	34.82	0.00	0.00	34.82
	Ag Review	34.82	-0.56	0.05	34.22
	AgLine by Doane	34.82	0.69	0.04	35.48
	AgriVisor (aggressive hedge)	34.82	0.00	0.00	34.82
	AgriVisor (basic hedge)	34.82	0.00	0.00	34.82
	Brock	34.82	0.07	0.09	34.80
	Pro Farmer	34.82	1.79	0.05	36.57
	Progressive Ag	34.82	3.72	0.08	38.46
	Stewart-Peterson Advisory Reports	34.82	1.22	0.04	36.00
	Top Farmer Intelligence	34.82	5.20	0.12	39.90
	Utterback	34.82	4.02	0.14	38.71
	Descriptive Statistics:				
	Average	34.82	1.35	0.05	36.12
	Standard Deviation	0.00	1.92	0.05	1.89
Quarter #2					
	Ag Profit by Hjort	39.38	0.50	0.01	39.87
	Ag Resource	39.38	1.11	0.04	40.45
	Ag Review	39.38	0.30	0.10	39.58
	AgLine by Doane	39.38	0.25	0.06	39.57
	AgriVisor (aggressive hedge)	39.38	0.00	0.00	39.38
	AgriVisor (basic hedge)	39.38	0.00	0.00	39.38
	Brock	39.38	0.84	0.13	40.09
	Pro Farmer	39.38	0.00	0.00	39.38
	Progressive Ag	39.38	3.72	0.08	43.02
	Stewart-Peterson Advisory Reports	39.38	-1.23	0.04	38.11
	Top Farmer Intelligence	39.38	4.06	0.46	42.97
	Utterback	39.38	0.00	0.00	39.38
	Descriptive Statistics:				
	Average	39.38	0.80	0.08	40.10
	Standard Deviation	0.00	1.55	0.13	1.46

Table A4, Continued

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #3					
	Ag Profit by Hjort	33.62	0.21	0.01	33.83
	Ag Resource	33.62	1.07	0.04	34.65
	Ag Review	33.62	-0.89	0.12	32.61
	AgLine by Doane	33.62	2.38	0.07	35.93
	AgriVisor (aggressive hedge)	33.62	0.00	0.00	33.62
	AgriVisor (basic hedge)	33.62	0.00	0.00	33.62
	Brock	33.62	0.37	0.07	33.92
	Pro Farmer	33.62	0.10	0.04	33.68
	Progressive Ag	33.62	3.72	0.08	37.26
	Stewart-Peterson Advisory Reports	33.62	1.89	0.11	35.40
	Top Farmer Intelligence	33.62	9.18	0.59	42.22
	Utterback	33.62	-0.24	0.06	33.33
	Descriptive Statistics:				
	Average	33.62	1.48	0.10	35.01
	Standard Deviation	0.00	2.75	0.16	2.61
Quarter #4					
	Ag Profit by Hjort	19.25	3.16	0.02	22.39
	Ag Resource	19.25	1.74	0.15	20.83
	Ag Review	19.25	-0.78	0.05	18.42
	AgLine by Doane	19.25	2.76	0.11	21.89
	AgriVisor (aggressive hedge)	19.25	6.33	0.04	25.53
	AgriVisor (basic hedge)	19.25	6.33	0.04	25.53
	Brock	19.25	1.70	0.10	20.85
	Pro Farmer	19.25	7.35	0.11	26.48
	Progressive Ag	19.25	3.72	0.08	22.89
	Stewart-Peterson Advisory Reports	19.25	0.26	0.08	19.42
	Top Farmer Intelligence	19.25	8.51	0.61	27.14
	Utterback	19.25	0.94	0.10	20.08
	Descriptive Statistics:				
	Average	19.25	3.50	0.12	22.62
	Standard Deviation	0.00	2.99	0.16	2.92
	Yearly Statistics:				
	Average Cash Price	31.77			
	Average Net Advisory Price	33.46			
	Standard Deviation	6.97			

Note: To obtain net advisory price, add (1) + (2) - (3). Cash prices are the Iowa/Minnesota adjusted quarterly cash prices.

Table A5. Pricing Results for 12 Market Advisory Programs, Hogs, 1999 Quarters 1-4

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #1					
	Ag Profit by Hjort	27.09	1.17	0.02	28.24
	Ag Resource	27.09	0.91	0.13	27.88
	Ag Review	27.09	-0.09	0.02	26.99
	AgLine by Doane	27.09	3.24	0.05	30.29
	AgriVisor (aggressive hedge)	27.09	4.36	0.05	31.40
	AgriVisor (basic hedge)	27.09	4.36	0.05	31.40
	Brock	27.09	0.20	0.09	27.20
	Pro Farmer	27.09	4.39	0.17	31.32
	Progressive Ag	27.09	0.00	0.00	27.09
	Stewart-Peterson Advisory Reports	27.09	-6.01	0.21	20.87
	Top Farmer Intelligence	27.09	-0.67	0.03	26.39
	Utterback	27.09	1.24	0.23	28.10
	Descriptive Statistics:				
	Average	27.09	1.09	0.09	28.10
	Standard Deviation	0.00	2.92	0.08	2.94
Quarter #2					
	Ag Profit by Hjort	34.12	1.92	0.04	36.00
	Ag Resource	34.12	0.44	0.02	34.55
	Ag Review	34.12	-1.73	0.15	32.24
	AgLine by Doane	34.12	3.24	0.05	37.32
	AgriVisor (aggressive hedge)	34.12	-0.20	0.01	33.91
	AgriVisor (basic hedge)	34.12	-0.20	0.01	33.91
	Brock	34.12	-1.52	0.17	32.44
	Pro Farmer	34.12	4.75	0.20	38.67
	Progressive Ag	34.12	0.00	0.00	34.12
	Stewart-Peterson Advisory Reports	34.12	1.50	0.08	35.55
	Top Farmer Intelligence	34.12	-0.22	0.01	33.89
	Utterback	34.12	0.14	0.18	34.08
	Descriptive Statistics:				
	Average	34.12	0.68	0.08	34.72
	Standard Deviation	0.00	1.89	0.08	1.88

Table A5, Continued

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #3					
	Ag Profit by Hjort	35.70	0.45	0.05	36.10
	Ag Resource	35.70	1.76	0.13	37.33
	Ag Review	35.70	-0.01	0.12	35.57
	AgLine by Doane	35.70	2.79	0.05	38.44
	AgriVisor (aggressive hedge)	35.70	0.00	0.00	35.70
	AgriVisor (basic hedge)	35.70	0.00	0.00	35.70
	Brock	35.70	-0.38	0.16	35.15
	Pro Farmer	35.70	5.93	0.10	41.53
	Progressive Ag	35.70	0.00	0.00	35.70
	Stewart-Peterson Advisory Reports	35.70	-5.07	0.23	30.39
	Top Farmer Intelligence	35.70	0.54	0.03	36.20
	Utterback	35.70	5.37	0.20	40.87
	Descriptive Statistics:				
	Average	35.70	0.95	0.09	36.56
	Standard Deviation	0.00	2.87	0.08	2.88
Quarter #4					
	Ag Profit by Hjort	36.37	-0.32	0.02	36.03
	Ag Resource	36.37	0.42	0.14	36.65
	Ag Review	36.37	-1.82	0.14	34.41
	AgLine by Doane	36.37	1.94	0.05	38.26
	AgriVisor (aggressive hedge)	36.37	-0.74	0.02	35.61
	AgriVisor (basic hedge)	36.37	-0.74	0.02	35.61
	Brock	36.37	1.84	0.14	38.07
	Pro Farmer	36.37	-2.11	0.11	34.14
	Progressive Ag	36.37	0.00	0.00	36.37
	Stewart-Peterson Advisory Reports	36.37	0.24	0.09	36.52
	Top Farmer Intelligence	36.37	-0.75	0.06	35.55
	Utterback	36.37	-5.04	0.19	31.14
	Descriptive Statistics:				
	Average	36.37	-0.59	0.08	35.70
	Standard Deviation	0.00	1.86	0.06	1.89
	Yearly Statistics:				
	Average Cash Price	33.32			
	Average Net Advisory Price	33.77			
	Standard Deviation	4.12			

Note: To obtain net advisory price, add (1) + (2) - (3). Cash prices are the Iowa/Minnesota adjusted quarterly cash prices.

Table A6. Pricing Results for 12 Market Advisory Programs, Hogs, 2000 Quarters 1-4

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #1					
	Ag Profit by Hjort	41.13	-3.79	0.05	37.30
	Ag Resource	41.13	0.00	0.00	41.13
	Ag Review	41.13	-1.38	0.06	39.68
	AgLine by Doane	41.13	-4.13	0.05	36.96
	AgriVisor (aggressive hedge)	41.13	-1.53	0.03	39.57
	AgriVisor (basic hedge)	41.13	-1.53	0.03	39.57
	Brock	41.13	-2.40	0.09	38.63
	Pro Farmer	41.13	-2.98	0.07	38.08
	Progressive Ag	41.13	0.00	0.00	41.13
	Stewart-Peterson Advisory Reports	41.13	-0.11	0.03	40.99
	Top Farmer Intelligence	41.13	0.66	0.12	41.67
	Utterback	41.13	-3.78	0.28	37.06
	Descriptive Statistics:				
	Average	41.13	-1.75	0.07	39.31
	Standard Deviation	0.00	1.67	0.08	1.70
Quarter #2					
	Ag Profit by Hjort	51.54	-4.66	0.06	46.83
	Ag Resource	51.54	0.39	0.07	51.87
	Ag Review	51.54	0.21	0.03	51.72
	AgLine by Doane	51.54	-6.22	0.05	45.28
	AgriVisor (aggressive hedge)	51.54	-2.43	0.03	49.08
	AgriVisor (basic hedge)	51.54	-2.43	0.03	49.08
	Brock	51.54	-4.76	0.11	46.68
	Pro Farmer	51.54	0.00	0.00	51.54
	Progressive Ag	51.54	0.00	0.00	51.54
	Stewart-Peterson Advisory Reports	51.54	-5.52	0.18	45.85
	Top Farmer Intelligence	51.54	1.37	0.28	52.64
	Utterback	51.54	0.00	0.00	51.54
	Descriptive Statistics:				
	Average	51.54	-2.00	0.07	49.47
	Standard Deviation	0.00	2.68	0.08	2.69

Table A6, Continued

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #3					
	Ag Profit by Hjort	46.69	-1.82	0.07	44.80
	Ag Resource	46.69	0.00	0.00	46.69
	Ag Review	46.69	1.10	0.06	47.73
	AgLine by Doane	46.69	0.00	0.00	46.69
	AgriVisor (aggressive hedge)	46.69	1.78	0.04	48.42
	AgriVisor (basic hedge)	46.69	1.41	0.03	48.06
	Brock	46.69	2.36	0.12	48.93
	Pro Farmer	46.69	0.00	0.00	46.69
	Progressive Ag	46.69	0.00	0.00	46.69
	Stewart-Peterson Advisory Reports	46.69	0.40	0.09	47.00
	Top Farmer Intelligence	46.69	-0.70	0.09	45.90
	Utterback	46.69	0.64	0.06	47.27
	Descriptive Statistics:				
	Average	46.69	0.43	0.05	47.07
	Standard Deviation	0.00	1.13	0.04	1.12
Quarter #4					
	Ag Profit by Hjort	39.66	-0.89	0.10	38.68
	Ag Resource	39.66	0.74	0.04	40.36
	Ag Review	39.66	0.05	0.06	39.65
	AgLine by Doane	39.66	0.00	0.00	39.66
	AgriVisor (aggressive hedge)	39.66	1.23	0.07	40.82
	AgriVisor (basic hedge)	39.66	1.23	0.07	40.82
	Brock	39.66	0.66	0.12	40.19
	Pro Farmer	39.66	0.00	0.00	39.66
	Progressive Ag	39.66	0.00	0.00	39.66
	Stewart-Peterson Advisory Reports	39.66	-1.47	0.22	37.97
	Top Farmer Intelligence	39.66	0.97	0.21	40.42
	Utterback	39.66	1.13	0.09	40.70
	Descriptive Statistics:				
	Average	39.66	0.30	0.08	39.88
	Standard Deviation	0.00	0.85	0.07	0.87
	Yearly Statistics:				
	Average Cash Price	44.76			
	Average Net Advisory Price	43.94			
	Standard Deviation	4.78			

Note: To obtain net advisory price, add (1) + (2) - (3). Cash prices are the Iowa/Minnesota adjusted quarterly cash prices.

Table A7. Pricing Results for 11 Market Advisory Programs, Hogs, 2001 Quarters 1-4

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #1					
	Ag Resource	42.48	1.25	0.07	43.65
	Ag Review	42.48	-3.21	0.05	39.22
	AgLine by Doane	42.48	0.00	0.00	42.48
	AgriVisor (aggressive hedge)	42.48	0.19	0.05	42.62
	AgriVisor (basic hedge)	42.48	0.19	0.05	42.62
	Brock	42.48	-0.18	0.12	42.17
	Pro Farmer	42.48	0.00	0.00	42.48
	Progressive Ag	42.48	-0.32	0.07	42.09
	Stewart-Peterson Advisory Reports	42.48	-1.15	0.13	41.20
	Top Farmer Intelligence	42.48	0.49	0.02	42.95
	Utterback	42.48	0.28	0.03	42.73
	Descriptive Statistics:				
	Average	42.48	-0.22	0.05	42.20
	Standard Deviation	0.00	1.15	0.04	1.15
Quarter #2					
	Ag Resource	52.03	-0.25	0.02	51.77
	Ag Review	52.03	-3.66	0.05	48.32
	AgLine by Doane	52.03	-1.86	0.05	50.12
	AgriVisor (aggressive hedge)	52.03	0.51	0.07	52.47
	AgriVisor (basic hedge)	52.03	0.56	0.06	52.53
	Brock	52.03	-2.46	0.09	49.48
	Pro Farmer	52.03	-1.25	0.10	50.68
	Progressive Ag	52.03	-0.35	0.12	51.57
	Stewart-Peterson Advisory Reports	52.03	-1.15	0.13	50.76
	Top Farmer Intelligence	52.03	-4.63	0.20	47.21
	Utterback	52.03	-4.59	0.22	47.23
	Descriptive Statistics:				
	Average	52.03	-1.74	0.10	50.20
	Standard Deviation	0.00	1.89	0.06	1.93

Table A7, Continued

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #3					
	Ag Resource	51.05	-0.57	0.03	50.45
	Ag Review	51.05	0.00	0.00	51.05
	AgLine by Doane	51.05	-5.72	0.09	45.24
	AgriVisor (aggressive hedge)	51.05	0.36	0.03	51.37
	AgriVisor (basic hedge)	51.05	0.36	0.03	51.37
	Brock	51.05	-1.48	0.09	49.48
	Pro Farmer	51.05	-4.72	0.07	46.25
	Progressive Ag	51.05	-0.36	0.14	50.54
	Stewart-Peterson Advisory Reports	51.05	-1.40	0.09	49.56
	Top Farmer Intelligence	51.05	-1.19	0.09	49.77
	Utterback	51.05	-6.56	0.14	44.35
	Descriptive Statistics:				
	Average	51.05	-1.93	0.07	49.04
	Standard Deviation	0.00	2.51	0.05	2.54
Quarter #4					
	Ag Resource	37.62	0.00	0.00	37.62
	Ag Review	37.62	0.60	0.03	38.19
	AgLine by Doane	37.62	1.87	0.05	39.45
	AgriVisor (aggressive hedge)	37.62	0.36	0.03	37.95
	AgriVisor (basic hedge)	37.62	0.36	0.03	37.95
	Brock	37.62	0.29	0.14	37.77
	Pro Farmer	37.62	1.74	0.05	39.32
	Progressive Ag	37.62	-0.36	0.14	37.12
	Stewart-Peterson Advisory Reports	37.62	-0.86	0.08	36.68
	Top Farmer Intelligence	37.62	4.51	0.05	42.08
	Utterback	37.62	-0.87	0.08	36.67
	Descriptive Statistics:				
	Average	37.62	0.70	0.06	38.25
	Standard Deviation	0.00	1.55	0.05	1.56
	Yearly Statistics:				
	Average Cash Price	45.79			
	Average Net Advisory Price	44.92			
	Standard Deviation	5.29			

Note: To obtain net advisory price, add (1) + (2) - (3). Cash prices are the Iowa/Minnesota adjusted quarterly cash prices.

Table A8. Pricing Results for 11 Market Advisory Programs, Hogs, 2002 Quarters 1-4

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #1					
	Ag Resource	39.72	0.00	0.00	39.72
	Ag Review	39.72	-0.45	0.02	39.24
	AgLine by Doane	39.72	0.00	0.00	39.72
	AgriVisor (aggressive hedge)	39.72	0.00	0.00	39.72
	AgriVisor (basic hedge)	39.72	0.00	0.00	39.72
	Brock	39.72	-0.30	0.12	39.30
	Pro Farmer	39.72	-0.34	0.05	39.33
	Progressive Ag	39.72	0.00	0.00	39.72
	Stewart-Peterson Advisory Reports	39.72	2.97	0.07	42.62
	Top Farmer Intelligence	39.72	3.30	0.09	42.92
	Utterback	39.72	-0.65	0.22	38.85
	Descriptive Statistics:				
	Average	39.72	0.41	0.05	40.08
	Standard Deviation	0.00	1.37	0.07	1.36
Quarter #2					
	Ag Resource	35.86	0.00	0.00	35.86
	Ag Review	35.86	0.80	0.01	36.65
	AgLine by Doane	35.86	0.00	0.00	35.86
	AgriVisor (aggressive hedge)	35.86	0.00	0.00	35.86
	AgriVisor (basic hedge)	35.86	0.00	0.00	35.86
	Brock	35.86	-0.30	0.12	35.45
	Pro Farmer	35.86	0.35	0.02	36.19
	Progressive Ag	35.86	0.00	0.00	35.86
	Stewart-Peterson Advisory Reports	35.86	5.38	0.14	41.10
	Top Farmer Intelligence	35.86	7.49	0.07	43.29
	Utterback	35.86	2.26	0.22	37.90
	Descriptive Statistics:				
	Average	35.86	1.45	0.05	37.26
	Standard Deviation	0.00	2.60	0.08	2.57

Table A8, Continued

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #3					
	Ag Resource	34.75	0.12	0.02	34.85
	Ag Review	34.75	1.60	0.02	36.33
	AgLine by Doane	34.75	0.00	0.00	34.75
	AgriVisor (aggressive hedge)	34.75	0.00	0.00	34.75
	AgriVisor (basic hedge)	34.75	0.00	0.00	34.75
	Brock	34.75	0.40	0.05	35.11
	Pro Farmer	34.75	0.00	0.00	34.75
	Progressive Ag	34.75	0.00	0.00	34.75
	Stewart-Peterson Advisory Reports	34.75	0.00	0.00	34.75
	Top Farmer Intelligence	34.75	0.71	0.06	35.40
	Utterback	34.75	0.41	0.17	35.00
	Descriptive Statistics:				
	Average	34.75	0.29	0.03	35.02
	Standard Deviation	0.00	0.49	0.05	0.48
Quarter #4					
	Ag Resource	31.48	0.54	0.08	31.94
	Ag Review	31.48	-0.59	0.05	30.84
	AgLine by Doane	31.48	-0.69	0.02	30.76
	AgriVisor (aggressive hedge)	31.48	0.00	0.00	31.48
	AgriVisor (basic hedge)	31.48	0.00	0.00	31.48
	Brock	31.48	0.00	0.00	31.48
	Pro Farmer	31.48	0.00	0.00	31.48
	Progressive Ag	31.48	-0.37	0.10	31.01
	Stewart-Peterson Advisory Reports	31.48	-0.42	0.07	30.99
	Top Farmer Intelligence	31.48	-2.19	0.06	29.23
	Utterback	31.48	-4.94	0.17	26.37
	Descriptive Statistics:				
	Average	31.48	-0.79	0.05	30.64
	Standard Deviation	0.00	1.54	0.05	1.58
	Yearly Statistics:				
	Average Cash Price	35.45			
	Average Net Advisory Price	35.75			
	Standard Deviation	3.85			

Note: To obtain net advisory price, add (1) + (2) - (3). Cash prices are the Iowa/Minnesota adjusted quarterly cash prices.

Table A9. Pricing Results for 11 Market Advisory Programs, Hogs, 2003 Quarters 1-4

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #1					
	Ag Resource	36.30	0.00	0.00	36.30
	Ag Review	36.30	0.00	0.00	36.30
	AgLine by Doane	36.30	0.31	0.01	36.60
	AgriVisor (aggressive hedge)	36.30	0.00	0.00	36.30
	AgriVisor (basic hedge)	36.30	0.00	0.00	36.30
	Brock	36.30	0.14	0.02	36.41
	Pro Farmer	36.30	0.00	0.00	36.30
	Progressive Ag	36.30	0.00	0.00	36.30
	Stewart-Peterson Advisory Reports	36.30	1.48	0.17	37.62
	Top Farmer Intelligence	36.30	-1.72	0.09	34.49
	Utterback	36.30	-1.58	0.19	34.53
	Descriptive Statistics:				
	Average	36.30	-0.12	0.04	36.13
	Standard Deviation	0.00	0.87	0.07	0.89
Quarter #2					
	Ag Resource	44.12	0.39	0.03	44.48
	Ag Review	44.12	1.44	0.05	45.52
	AgLine by Doane	44.12	-0.16	0.03	43.93
	AgriVisor (aggressive hedge)	44.12	1.23	0.03	45.33
	AgriVisor (basic hedge)	44.12	0.90	0.03	44.99
	Brock	44.12	2.20	0.12	46.20
	Pro Farmer	44.12	0.00	0.00	44.12
	Progressive Ag	44.12	0.00	0.00	44.12
	Stewart-Peterson Advisory Reports	44.12	-0.87	0.09	43.16
	Top Farmer Intelligence	44.12	-0.19	0.25	43.69
	Utterback	44.12	-0.47	0.03	43.62
	Descriptive Statistics:				
	Average	44.12	0.41	0.06	44.47
	Standard Deviation	0.00	0.93	0.07	0.93

Table A9, Continued

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #3					
	Ag Resource	42.67	0.39	0.03	43.03
	Ag Review	42.67	0.00	0.00	42.67
	AgLine by Doane	42.67	0.70	0.02	43.35
	AgriVisor (aggressive hedge)	42.67	0.47	0.03	43.11
	AgriVisor (basic hedge)	42.67	0.41	0.03	43.05
	Brock	42.67	1.39	0.05	44.01
	Pro Farmer	42.67	-0.56	0.02	42.08
	Progressive Ag	42.67	6.70	0.11	49.26
	Stewart-Peterson Advisory Reports	42.67	6.79	0.44	49.01
	Top Farmer Intelligence	42.67	0.85	0.20	43.32
	Utterback	42.67	0.00	0.00	42.67
	Descriptive Statistics:				
	Average	42.67	1.56	0.09	44.14
	Standard Deviation	0.00	2.61	0.13	2.52
Quarter #4					
	Ag Resource	36.09	1.79	0.09	37.79
	Ag Review	36.09	0.00	0.00	36.09
	AgLine by Doane	36.09	-1.21	0.05	34.83
	AgriVisor (aggressive hedge)	36.09	-0.45	0.08	35.55
	AgriVisor (basic hedge)	36.09	-0.45	0.08	35.55
	Brock	36.09	0.98	0.02	37.05
	Pro Farmer	36.09	0.00	0.00	36.09
	Progressive Ag	36.09	0.00	0.00	36.09
	Stewart-Peterson Advisory Reports	36.09	2.51	0.17	38.43
	Top Farmer Intelligence	36.09	1.98	0.12	37.95
	Utterback	36.09	0.00	0.00	36.09
	Descriptive Statistics:				
	Average	36.09	0.47	0.06	36.50
	Standard Deviation	0.00	1.18	0.06	1.14
	Yearly Statistics:				
	Average Cash Price	39.80			
	Average Net Advisory Price	40.31			
	Standard Deviation	4.30			

Note: To obtain net advisory price, add (1) + (2) - (3). Cash prices are the Iowa/Minnesota adjusted quarterly cash prices.

Table A10. Pricing Results for 11 Market Advisory Programs, Hogs, 2004 Quarters 1-4

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #1					
	Ag Resource	43.64	-1.74	0.06	41.84
	Ag Review	43.64	-2.56	0.11	40.96
	AgLine by Doane	43.64	-1.34	0.02	42.27
	AgriVisor (aggressive hedge)	43.64	-0.48	0.02	43.13
	AgriVisor (basic hedge)	43.64	-0.48	0.02	43.13
	Brock	43.64	1.53	0.05	45.12
	Pro Farmer	43.64	0.00	0.00	43.64
	Progressive Ag	43.64	0.00	0.00	43.64
	Stewart-Peterson Advisory Reports	43.64	-1.88	0.09	41.66
	Top Farmer Intelligence	43.64	-0.90	0.09	42.65
	Utterback	43.64	0.00	0.00	43.64
	Descriptive Statistics:				
	Average	43.64	-0.71	0.04	42.88
	Standard Deviation	0.00	1.14	0.04	1.16
Quarter #2					
	Ag Resource	54.28	-3.49	0.06	50.73
	Ag Review	54.28	-4.65	0.10	49.53
	AgLine by Doane	54.28	-3.90	0.04	50.34
	AgriVisor (aggressive hedge)	54.28	-0.34	0.02	53.92
	AgriVisor (basic hedge)	54.28	-0.34	0.02	53.92
	Brock	54.28	-2.55	0.08	51.64
	Pro Farmer	54.28	0.00	0.00	54.28
	Progressive Ag	54.28	0.00	0.00	54.28
	Stewart-Peterson Advisory Reports	54.28	0.00	0.00	54.28
	Top Farmer Intelligence	54.28	-4.06	0.14	50.08
	Utterback	54.28	0.00	0.00	54.28
	Descriptive Statistics:				
	Average	54.28	-1.76	0.04	52.48
	Standard Deviation	0.00	1.96	0.05	2.00

Table A10, Continued

	Market Advisory Program	(1) Net Cash Sales Price	(2) Futures & Options Gain	(3) Brokerage Costs	(4) Net Advisory Price
			---$/cwt.---		
Quarter #3					
	Ag Resource	56.01	-0.56	0.02	55.43
	Ag Review	56.01	-3.36	0.09	52.57
	AgLine by Doane	56.01	-0.84	0.02	55.15
	AgriVisor (aggressive hedge)	56.01	-0.41	0.02	55.58
	AgriVisor (basic hedge)	56.01	-0.41	0.02	55.58
	Brock	56.01	-1.63	0.05	54.34
	Pro Farmer	56.01	0.00	0.00	56.01
	Progressive Ag	56.01	0.00	0.00	56.01
	Stewart-Peterson Advisory Reports	56.01	-6.27	0.43	49.32
	Top Farmer Intelligence	56.01	-2.73	0.11	53.17
	Utterback	56.01	0.90	0.22	56.69
	Descriptive Statistics:				
	Average	56.01	-1.39	0.09	54.53
	Standard Deviation	0.00	2.04	0.13	2.13
Quarter #4					
	Ag Resource	55.41	-1.69	0.05	53.67
	Ag Review	55.41	-2.94	0.05	52.42
	AgLine by Doane	55.41	-2.11	0.08	53.22
	AgriVisor (aggressive hedge)	55.41	-2.01	0.04	53.37
	AgriVisor (basic hedge)	55.41	-2.01	0.04	53.37
	Brock	55.41	-4.65	0.07	50.70
	Pro Farmer	55.41	-1.87	0.02	53.52
	Progressive Ag	55.41	0.00	0.00	55.41
	Stewart-Peterson Advisory Reports	55.41	-6.65	0.09	48.67
	Top Farmer Intelligence	55.41	-5.98	0.09	49.35
	Utterback	55.41	-1.46	0.43	53.53
	Descriptive Statistics:				
	Average	55.41	-2.85	0.09	52.47
	Standard Deviation	0.00	2.04	0.12	2.04
	Yearly Statistics:				
	Average Cash Price	52.33			
	Average Net Advisory Price	50.59			
	Standard Deviation	4.93			

Note: To obtain net advisory price, add (1) + (2) - (3). Cash prices are the Iowa/Minnesota adjusted quarterly cash prices.