

Valuing Farm Financial Information

Dana M. Marcellino and Christine A. Wilson*

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Abstract

Despite the merits of good farm record keeping, little is known about the value farmers place on their farm financial records. This study uses a willingness-to-accept experimental second price auction to elicit such values from farmers. Results indicate farm records are extremely valuable and that some diversity in values is explained by the characteristics of the records and farmers. We find that experimental auctions can be used to elicit values for extremely high-valued goods, and we demonstrate how they can be used to value a complex good comprised of many sub-components.

Key words: experimental auction, farm financial records, willingness-to-accept.

*Dana M. Marcellino is a former M.S. student and Christine A. Wilson is an assistant professor in the Department of Agricultural Economics, Purdue University. Contact: Christine Wilson, Purdue University, Department of Agricultural Economics, 403 West State Street, West Lafayette, IN 47907; Phone: (765) 494-4299; Fax: (765) 494-9176; e-mail: wilson1@purdue.edu.

Valuing Farm Financial Information

For almost a century, agricultural economists have attempted to demonstrate to farmers the benefits of keeping financial records and have advocated sound accounting practices, e.g., Pond (1931) and Arnold (1931). Since 1914, Land Grant Universities have encouraged better farm record keeping by forming farm management associations. However, with the dwindling size of the farm population and the increases in technology and education of farmers, many have questioned the value of using public resources to support the maintenance of farm records. Indeed, today Cornell University, Kansas State University, and the University of Illinois are among the very few that still maintain farm management associations with very detailed modern record keeping activities. Nevertheless, evidence exists that farmers' record keeping may be sub-optimal. For example, 57% of farm loan applicants in Kentucky did not keep separate records for their farm and household and only a meager 3% use a computerized accounting system (Ibendahl, Isaacs, and Trimble 2002). Another study found that 29% of New York dairy farmers never formulate financial budgets (Gloy and LaDue 2003). Evidence also exists that one-third of farmers dislike record keeping or paperwork activities and record keeping and attending meetings are the least favorite farm activities among farmers (Lasley and Agnitsch 2002), possibly contributing to sub-optimal record keeping.

Several studies have attempted to link record keeping with profitability and performance, but evidence is mixed and is plagued with problems of endogeneity. Jackson-Smith, Trechter, and Splett (2004) found a relatively weak link between deeper understanding of financial concepts and greater financial return. Gloy, LaDue, and Youngblood (2002) found that farmers who focused on profitability goals attained higher profitability, but they acknowledged this might be attributed to farmers selecting goals in areas where they are already proficient. Ford

and Shonkwiler (1994) found that production practices were better than financial management indicators in predicting farm financial success.

Although the academic literature is replete with examples exposing the merits of farm record keeping and investigating the link between record keeping and financial performance, very little is known regarding the value farmers place on their financial information and the determinants of such value. Clearly, such information is needed as public institutions determine the quantity and quality of resources to devote to encouraging and supporting maintenance of farm records.

The primary purpose of this article is to determine the value farmers place on their financial information and the determinants of such value. We use a willingness-to-accept experimental auction and survey to elicit values and information. Experimental auctions have been used to estimate demand for and value numerous lower-valued goods or foods (e.g., Fox 1995; Fox et al. 1998; List and Shogren 1998; Lusk et al. 2001a, 2001b; Lusk, Roosen, and Fox 2003; Roosen et al. 1998; Shogren, List, and Hayes 2000). This article uniquely uses such auctions to evoke values for extremely high-valued goods, in this case business records.

This article tests the following hypotheses: (a) farmers that spend more time preparing and analyzing records will value their records more highly; (b) farmers with higher gross sales and more acres (larger farms) will value their records more highly; (c) farmers with more education will value their records more highly; (d) younger farmers will value their records more highly; (e) farmers with more accurate records will value their records more highly; (f) farmers that use more accurate measures of farm performance will value their records more highly; (g) farmers that have financial training will value their records more highly; (h) farmers using technology to prepare financial records will value their records more highly; (i) farmers that use

records to evaluate farm performance and for investment decision-making will value their records more highly; (j) farmers that use their tax returns for decision-making purposes (do not simply store them) will value their records more highly.

This research can provide insight by revealing the value farmers place on their business records. If farmers place very high valuations on their financial information, then financial records, while not the favorite task of some farmers, are recognized as valuable and very necessary to a farming operation. If farmer valuations for financial information are high, then past and future university farm financial management research and Extension work has been and will continue to be valuable to the farm business. Due consideration should be given to resources for farm financial management work. Additionally, this research provides insight on the use of experimental auction methods for valuing high-valued goods, which is currently absent from the existing literature.

Conceptual Framework: Irreplaceable Goods

The manner that irreplaceable goods are valued, a topic found often in literature dealing with insurance (e.g., Cook and Graham 1977; Shiohansi 1982), has direct application to how farmers value their financial records. An irreplaceable good is unique and cannot be exactly replaced if lost or stolen, unlike a replaceable good, which can be replaced if lost or stolen. Commonly cited irreplaceable goods are family heirlooms. An extreme irreplaceable good example is personal health (e.g., sight); there is no amount of money to fully compensate the owner over this lost object. Specific to this research, a farmer's financial records are considered an irreplaceable good. Figure 1 represents the loss of an irreplaceable good. Two states exist: state *a* where the object is kept and state *b* where the object is lost. At point A in Figure 1, the utility level $U(W_1, a)$ is the initial position where the owner is still in possession of the good. When the object is

lost, the individual's position moves to point B, on a lower utility level. Since the object is irreplaceable, it is not possible to move back from point B to point A. Due to the loss, the individual's utility is reduced by the amount $U_a(W_1) - U_b(W_1 - V_m)$. The loss can be broken down into two parts: sentimental value (V_s) and actual monetary loss equal to the market value (V_m) of the good. The sentimental loss in utility due to moving from state a to state b is shown by the move from Point A to B'. The monetary loss is shown in moving from the initial wealth level W_1 to $W_1 - V_m$ or moving from point B' to B. The minimum amount of compensation the owner is willing to accept for the loss of the irreplaceable good is $C(W)$, which is equal to V_s plus V_m .

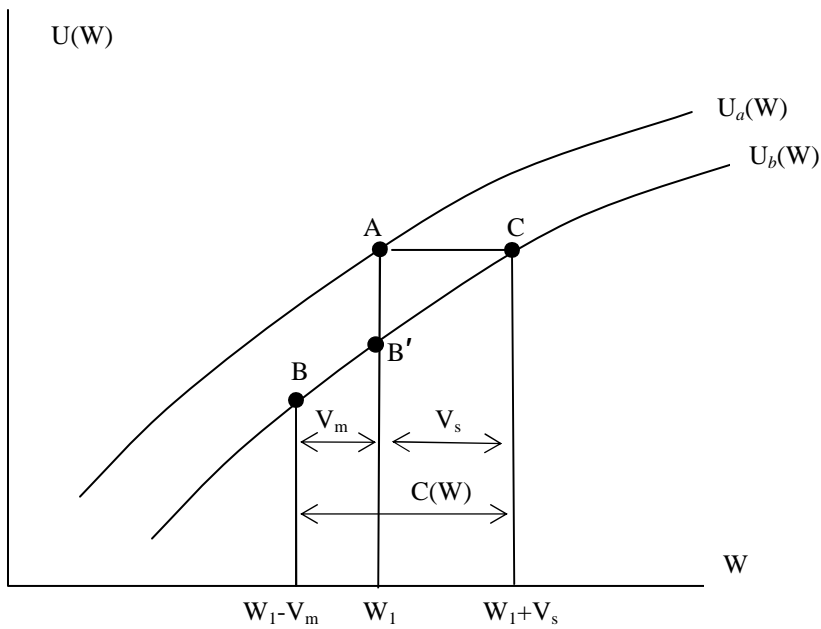


Figure 1. The utility effects of an irreplaceable good

Some irreplaceable objects have very little market value. As in the case of this research, an individual farmer's records have no market value. The records are only of value to the owner,

and there is no established market for the selling of farm financial records.¹ In such a case, the market value is negligible and the value of the object is established from the sentimental value.² Figure 2 shows the change in utility for an irreplaceable good comprised solely of sentimental value. The farmer in possession of his/her records is initially at point A. The farmer will only forfeit his/her records to move to point C if he/she is compensated $C(W)$ for the sentimental value.

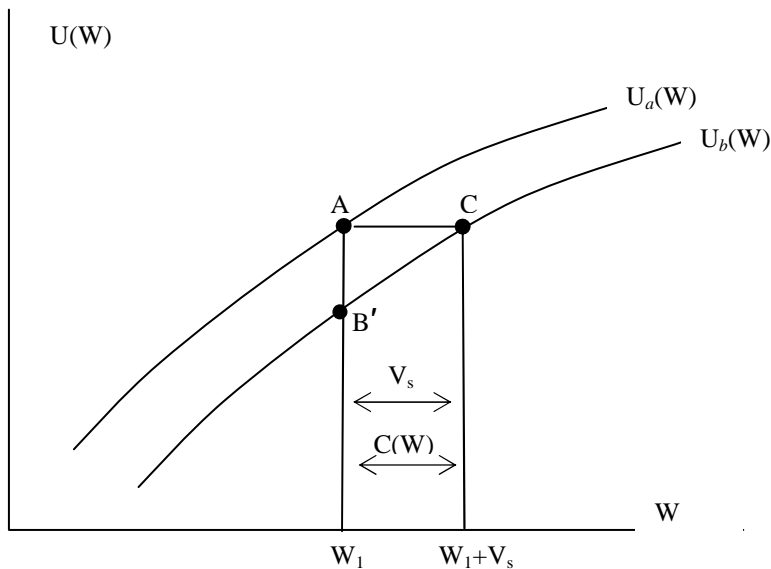


Figure 2. The utility effects of an irreplaceable good with no market value

Von Neumann-Morganstern Utility Function

The graphical content of Figure 2 can also be expressed through equations following the insurance example by Cook and Graham (1972). The individual preference of the farmer is expressed through the von Neumann-Morganstern utility function:

¹ We assume that these farm financial records have no value for identity fraud.

² The term *sentimental value* is somewhat a misnomer in the case of financial records, and a term such as *information value* or *personal value* might be more appropriate. Sentimental value is used in accordance with the terminology cited in other economic literature.

$$U(W, \theta), \quad (1)$$

where W represents wealth or a composite commodity involving all goods other than the commodity in question and is measured in dollars, and θ equals one if the farmer is in state a where his/her records are kept, and θ equals 0 in state b where his/her records are lost. The farmer can be in one of the two following states where $W \geq 0$:

$$U_a(W) = U(W, 1) \quad \text{or} \quad U_b(W) = U(W, 0). \quad (2)$$

It is assumed that the farmer prefers to be in state a where the records are in his/her possession, represented by the equation

$$U_a(W) > U_b(W). \quad (3)$$

The first order equation of the utility function is positive and the second-order equation is negative meaning the farmer's financial records are a normal good:

$$U_i''(W) < 0 < U_i'(W) \quad \text{where } i = a, b. \quad (4)$$

What value do irreplaceable financial records hold for the farmer? The measure used in this article to determine the value of financial records is the minimum compensation, represented by the bid price submitted in an experimental 2nd price auction, that would induce the participating farmer to accept state b in exchange for state a . The compensation amount is $C(W)$ and is defined by

$$U_b(W + C(W)) = U_a(W). \quad (5)$$

$C(W)$ is assumed to exist or $C(W)$ is infinite otherwise. If $C(W)$ is infinite, there is no amount of money the farmer is willing to be compensated by for the loss of his/her records.

The farmer's value of his/her records could also be expressed as the maximum amount the individual farmer is willing to be assured for the exchange from state b to state a . *Ransom* or

$R(W)$ is the amount an individual would exchange the certainty of state b for to receive the certainty of state a . $R(W)$ is defined as

$$U_b(W) = U_a(W - R(W)). \quad (6)$$

Compensation and ransom should only theoretically differ by wealth effects. For the purpose of this article, the amount of compensation needed to move farmers from state a (keeping their financial records) to state b (losing their financial records) is determined by an experimental auction. The ransom amount could not be calculated through experimental auctions since the participating farmers were already in the state of possessing their records and not in the state of having lost their records.

Experimental Auction Background

We use experimental auctions to elicit an individual farmer's value of his/her financial records. In the last decade, experimental auctions (EA) have become a popular method of non-market valuation. EA have been recently used in agricultural economics literature to find consumer willingness-to-pay (WTP) for items ranging from genetically modified food labels (Huffman et al. 2003) to tenderness and flavor in steaks (Feuz et al. 2004). The primary advantages of experimental auctions are the incentive compatible nature and nonhypothetical context of auctions as EA involve real goods and real money (Lusk 2003). EA also have the benefit of obtaining a WTP (or bid) from each subject, and the modeling determinants of WTP are uncomplicated given the continuous nature of the dependent variable (Lusk and Hudson 2004).

Of the available experimental auction mechanisms, the Vickrey second-price auction has often been used. The popularity of the second-price auction can be accredited to its characteristics: it is demand revealing in theory, it is relatively easy to explain, and it has an endogenous market-clearing price (Huffman et al. 2003). In a second-price auction, competitors

simultaneously submit sealed bids for a good. The individual with the lowest bid wins the auction and pays the second highest bid price (Lusk, Feldkamp, and Schroeder 2004). The second-price auction provides the incentive for study participants to truly reveal their preferences as the auction separates individual valuations from market price. The market price (the 2nd highest bid) is separate from one's individual bid; consequently, there is no gain in strategic bidding. Shogren et al. (1994) state, "bidding less than one's true value reduces the chance of winning at would have been a profitable price, while bidding more than one's true value increases the chance of winning but at a price that exceeds one's value" (p. 1098). However, some evidence suggests that subjects "over-bid" in second-price auctions compared to other auction-mechanisms (Kagel and Levin 1993; Lusk, Feldkamp, and Schroeder 2004).

Data and Methods

Because this research is interested in valuing a good, e.g., farm records, which is owned by the study participants in question, a 2nd price willingness-to-accept (WTA) auction was conducted. That is, we sought to measure the minimum amount of money that must be paid to a farmer such that they would be willing to permanently give up their financial records. Several preliminary focus groups and pre-tests were conducted to determine an individual's reaction to the auction mechanism and to determine how to characterize records which could vary greatly in terms of quantity and quality. It was learned that a non-trivial number of individuals were unwilling to bid to give up their records. This led us to modify the auction format such that individuals could simply check a box on their bid-sheet indicating they did not want to participate in the auction.

Participants in the primary portion of the study came from two main sources. First, 35 people were recruited from a "Top Farmer Crop Workshop" held at Purdue University; the audience was a group of competitive, commercial producers. Participation in the experiment

was part of an optional luncheon session. Second, 37 people were recruited by Purdue University Extension educators to attend one of five sessions in various regions of Indiana. An average of seven farmers came to each session, which took place at a local restaurant or at the county building. To encourage farmer participation, the farmers were given a free lunch for their participation.

Data collection proceeded in three stages. Participants first completed a written survey, then participated in a willingness-to-accept auction to give up an endowed candy bar, and finally, bids in the non-hypothetical financial records auction were collected. The survey collected information on the individuals, their farms, and their farm records. Once respondents completed the survey, they read instructions for the second price candy bar auction. The candy bar auction was used to introduce the mechanism to participants so as to increase understanding. Each participant was endowed with a name brand candy bar and subjects bid, in a second price auction, to sell their candy bar back to the monitor. The lowest bidder won the auction and was paid the second lowest bid amount for their candy bar.

After the candy bar auction, participants were informed of the chance to sell their financial records in a second price auction similar to the one they had previously participated in. The farmers then completed an inventory sheet identifying the type and quality of records they possessed. For example, subjects were asked whether they maintained a balance sheet, statement of cash flows, income statement, statement of owner's equity, checkbook register, and tax records. For each item listed, farmers were asked if they prepared the item listed, how many of the past five years have they prepared the item, and if the item's form was handwritten or electronic.

After the participants filled out the financial records inventory sheet, they were requested to decide on an amount, e.g., a bid, for which they were willing to sell all the documents listed on their inventory. Because the bid consists of the price at which participants were willing to sell several different types of financial information, the participants were asked to indicate, in percentage terms, the amount that reflected their value for the balance sheet, statement of cash flows, income statement, statement of owner's equity, checkbook register, and tax records.

Several key points were emphasized to the participants. Participants were informed that bids would be collected at several locations over the time period of several days. The lowest bidder across all locations would be contacted later to be informed of their winning. It was also stressed that the auction was not hypothetical; the winner would receive real money for his/her financial records. The instructions emphasized that the winner was expected to give all originals and copies of the records listed on their individual financial records inventory sheet. It was made clear that the farmer with the lowest bid would receive in cash the overall second lowest bid price, but he/she would forfeit his records. A tax audit was the only exception to the winner of the auction regaining the right to view his/her records. As in the candy bar auction, it was explained, in detail, why the best strategy was to submit a bid exactly equal to the amount that would make the person indifferent between money and their records. It was explained that no bid was too small or too high. The participants were also told that if there was no amount of money they were willing to accept for their financial records, they could select that option on the bid sheet. An opt-out option was offered to discourage participants from writing down an artificially high bid price out of "protest" and to discourage participants from leaving the bid sheet blank.³

³ Auction instructions, the bid sheet, and the survey are available from the authors on request.

Tables 1 and 2 provide summary statistics of selected demographic variables. The data are broken down into our two general participant groups: the county Extension meetings and the Top Farmer Crop Workshop (TFCW) participants. The data are broken down since the TFCW participants are inclined to be more competitive, commercial farmers than average. Data indicate the TFCW participants had on average 1,500 more acres in crop production and were more likely to have achieved a higher level of education than county meeting farmers. Additionally, the vast majority of the study's participants were male; 100% of the TFCW participants and 91% of the county meeting participants were male. Finally, the average ages of the TFCW participants and county meeting participants were 45 and 50 years, respectively.

Table 1. Summary Statistics of Participant Farm Acres by Commodity

	Corn	Soybeans	Wheat	Fruits/Veg.	Forage	Other	Total
	<u>County Meetings</u>						
Mean	684	533	18	0	22	1	1,257
Median	500	350	0	0	0	0	950
Minimum	0	0	0	0	0	0	0
Maximum	3,200	2,300	200	2	300	25	4,800
Stand Dev.	743	561	43	0	58	4	1,221
Number of Participants	30	29	10	1	11	1	33
	<u>TFCW</u>						
Mean	1,381	1,082	226	2	36	27	2,754
Median	1,100	925	0	0	0	0	2,293
Minimum	0	0	0	0	0	0	80
Maximum	3,500	3,000	1,300	60	400	837	7,500
Stand Dev.	1,041	879	425	10	89	144	2,023
Number of Participants	33	32	16	3	9	2	34

Table 2. Summary of Participant Education Levels

	High School Credit	High School Degree	College Credit	College Degree	Graduate Credit	Graduate Degree
<u>County Meetings</u>						
Responses	2	11	7	6	2	8
Percentages	6%	31%	20%	17%	6%	23%
<u>TFCW</u>						
Responses	0	1	8	14	5	6
Percentage	0%	3%	24%	41%	15%	18%

Results

Of the 72 participants in the study, 53 submitted positive bids, 18 people checked the box on the bid sheet indicating that there was no amount of money they would accept for their records, and 1 person did not complete their bid sheet. Two of the 72 participants did not fully complete their surveys and the bid sheet so their results were not included in the analysis. One completed bid was eliminated from the analysis as the bid was four times the next highest bid and was greater than the operation's total fair market value for the size of operation indicated on the survey. A total of 69 bids (including the participants that checked the no-bid box) were included in the results. Of those individuals submitting bids, the range was from \$100 to \$2,500,000, with the average bid being \$145,657 and the median being \$25,575.

Table 3 reports the distribution of bid prices. Nearly 50% of the bids were in the bid range \$10,001 to \$100,000; roughly 33% were below \$10,000 and 17% were greater than \$100,000. For the 18 participants that marked the no-bid box, it is possible there was truly no amount of money that they were willing to receive for their records, that they did not understand the auction mechanism, that their true valuations were so high they no had chance of winning the

auction and replied as such so that they did not have to submit bid prices, or that they simply did not want to participate.

Table 3. Bid Value Distribution

Bid Range	Frequency	Relative Percentage	Cumulative Percentage
\$0 - \$1,000	5	9.80%	9.80%
\$1,001 - \$10,000	12	23.53%	33.33%
\$10,001 - \$20,000	5	9.80%	43.14%
\$20,001 - \$40,000	5	9.80%	52.94%
\$40,001 - \$60,000	9	17.65%	70.59%
\$60,001 - \$80,000	1	1.96%	72.55%
\$80,001 - \$100,000	5	9.80%	82.35%
\$100,001 - \$500,000	5	9.80%	92.16%
\$500,001 - \$1,000,000	2	3.92%	96.08%
greater than \$1,000,000	2	3.92%	100.00%

Values by Record Type

A participant's bid consists of their value for six potential types of records (balance sheet, statement of cash flows, income statement, statement of owner's equity, checkbook register, and tax records). After submitting their bid, participants were asked to indicate, of the total bid amount, the percentage value attributable to each type of record. Specific values for an individual record type can be determined by multiplying the assigned percentage by the submitted bid price.

Table 4 reports summary statistics for the specific values for the auctioned records.⁴

Table 4 indicates tax records were on average the most valued type of record, followed by the balance sheet. The checkbook register, cash flow statement, and statement of owner's equity were on average the least valued types of records.

⁴ Results include participants that assigned certain records a value of \$0 and presume that participants that did not prepare certain records also valued that specific record at \$0.

Table 4. Values of Different Types of Financial Records

	Balance Sheet	Cash Flows	Income Statement	Owner's Equity	Checkbook Register	Tax Records
Mean	\$30,747	\$17,477	\$26,180	\$19,016	\$13,420	\$39,755
Median	\$7,500	\$1,575	\$4,500	\$1,000	\$1,875	\$5,000
Minimum	\$0	\$0	\$0	\$0	\$0	\$38
Maximum	\$500,000	\$500,000	\$500,000	\$500,000	\$300,000	\$700,000
Standard Deviation	488,906	\$70,418	\$82,179	\$474,847	\$43,273	\$120,295
Mean Percent	20.35%	10.44%	15.55%	7.40%	18.39%	30.10%
NSB ^a Mean Percent	27.86%	10.00%	14.62%	8.33%	17.86%	32.14%

^a Participants that marked the no submitted bid box.

The assigned percentage weights of the individual records also provide insight on what records farmers value most. Fifteen of the 18 participants that did not submit a bid price did provide percentage weights for their financial records (table 4). The percentage weights assigned by the no-bidders are in most cases similar to those provided by the participants that submitted a bid price. For both groups of participants, tax records were the most valued records percentage-wise, followed by the balance sheet, checkbook register, income statement, statement of cash flows, and the statement of owner's equity, respectively.

Farmer Characteristics and Bid Values

Because of the wide dispersion of auction bids, farmers were placed in one of four roughly even sized bid categories: bids between \$0 and \$14,999, bids between \$15,000 and \$75,499, bids \$75,000 and greater, and farmers who did not submit a bid. Categorizing the bids into ranges and including a 'no submitted bid' category as a bid range allows participants that did not submit a bid to be compared to those that did submit a bid when examining factors that influence bid price.

The PROC GLM (General Linear Model) in SAS was used to run ANOVA tests. Each bid range was assigned a factor level: greater than \$75,000=1, \$15,000-\$75,499=2, \$14,999-0=3, no bid=4. A *class* statement was used in PROC GLM to define the bid range variable as a classification or categorical variable. The null hypothesis tested is that the mean value for a variable (e.g., time spent preparing records) is the same for all bid ranges.

Table 5 shows the means for several record, farm, and farmer characteristics segregated by the four bid categories. Results indicate that those individuals submitting the lowest bids spend the least amount of time, on average, preparing their records. The hypothesis that the mean time spent preparing records is the same for each of the four bid categories can be rejected at the $p=0.01$ level according to an ANOVA test. Time spent analyzing records was roughly increasing in the amount bid for financial records, but the means were not statistically different across categories. Table 5 shows a pronounced difference in the value of farm records across farm size. Farmers in the lowest bid category (\$0 to \$14,999) had gross farm sales 4.26 times lower (\$1,015,000 vs. \$238,160), on average, than farmers in the highest bid category (\$75,000 and greater). The hypotheses that mean gross farm sales and mean farm acreage are the same across bid categories can be rejected at the $p=0.01$ level according to the ANOVA tests. However, although older farmers tended to submit either lower or no-bids, and those submitting bids in the highest bid category (\$75,000 and greater) were the most educated on average, results of the ANOVA tests could not reject the hypotheses that age and education were equivalent across bid categories. The results in table 5 also provide some insight into the characteristics of the individuals choosing not to bid in the auction. Such individuals tended to be the least educated, the oldest, and while having relatively large farms in terms of acreage, their gross sales

were relatively low (i.e., they were low performing as exhibited by relatively small gross sales per acre).

Table 5. Distribution of Bids for Farm Records and Characteristics of Farmers in Four Bid Ranges

Bid Category	Number of Bids	Average Time Preparing Records^a (hours/month)	Average Time Analyzing Records^a (hours/month)	Average Gross Farm Sales^b (thousands of dollars)	Average Acreage	Average Education Level^c	Average Age
\$0-14,999	19	8.95	6.32	238.16	689	4.16	50.95
\$15,000-\$75,499	17	21.47	9.12	1,050.00	2,571	3.76	43.47
\$75,000 and greater	15	19.00	10	1,015.00	2,533	4.27	43.87
No submitted bid	18	13.33	8.61	633.33	2,311	3.50	52.11
P-value ^d		0.01	0.56	0.01	0.01	0.41	0.10

^aParticipants indicated time used by marking a time range; estimations were made to allow for ANOVA analysis. 0 hours/month=0 hours; likewise 0-10 hours =5; 10-20 hours =15; 20-30 hours =25; 30-40 hours =35; 30-40 hours =35; and over 40 hours =45.

^bAnnual gross farms sales ranges from the survey were changed to: less than \$100,000=\$50,000; \$100,000-\$250,000=\$175,000; \$250,000-\$500,000=\$375,000; \$500,000-\$1,000,000=\$750,000; and over \$1,000,000=\$1,500,000.

^c1=high school credit, 2=high school graduate, 3=college credit, 4=college graduate, 5=graduate credit, 6=graduate degree.

^dP-value from an ANOVA test of the hypothesis that the mean value of the variable in the column is the same for all bid ranges.

Because ANOVA can only be used with continuous dependent variables, the binary results from the survey were analyzed through bid range categorization and mean response. Several farm record keeping activities are of interest. Specific interest areas include: (a) how accurate are the financial records; (b) what measures of farm performance are used; (c) what type of financial training has been received; (d) how is technology used; and (e) how are records used.

Table 6 reports the mean responses of survey questions pertaining to record accuracy, key financial performance measures, and financial training. The type of accounting system used (i.e., cash or accrual) and the method of valuing assets (i.e., cost basis or market value) were

indicators of financial accuracy. The practices of keeping personal and farm records separate, reconciling bank statements with farm records, and generating balance sheets at the beginning and end of each accounting period were also viewed as activities that increased accuracy. Participants that used accrual accounting, kept farm records separate from personal records, reconciled bank statements with farm records, and generated balance sheets at the beginning and end of each accounting period tended to submit higher bids. The responses for using a cash-based system or an accrual system and using cost basis or a market value to value assets are mixed as many participants seemed to use some type of combination of accounting systems and asset valuation methods. Table 6 suggests that participants electing not to bid lagged behind in some areas of accuracy but not in others.

Results in table 6 support the expectations that farmers with some financial training and farmers using more accurate measures of farm performance will more highly value their records. A larger percentage of farmers with higher bids had financial training than farmers with lower bids. Farm performance was assessed through farmer use of the profitability measures of net cash income, return on assets (ROA), return on equity (ROE), checkbook balance, gross (total) cash income, and accrual net farm income. Fifty percent of participants with bids greater than \$75,000 used ROE as a principal financial performance measure—a preferred method due to its accuracy in measuring performance. Twenty-nine percent of the participants in the highest bid range were also using the other preferred performance measure of ROA. The majority of participants in the lowest bid category and the no-bidders preferred net cash income as their key measure of farm performance.

Table 6. Mean^a Response for Farm Records Characteristics in Four Bid Ranges

Survey Question	Bid Range			
	\$0-14,999	\$15,000-75,499	\$75,000 and greater	No submitted bid
<i>Accuracy</i>				
Cash Accounting	0.89	0.94	0.87	0.89
Accrual Accounting	0.30	0.20	0.57	0.00
Cost Basis	0.32	0.13	0.13	0.28
Market Value	0.42	0.31	0.40	0.50
Farm & Personal Records Separate	0.79	0.82	0.93	0.78
Reconcile Records & Bank Statement	0.74	0.94	0.93	0.56
Beginning & Ending Balance Sheets	0.47	0.76	0.87	0.83
<i>Key Financial Measures</i>				
Net Cash Income	0.58	0.41	0.29	0.72
ROA	0.21	0.18	0.29	0.17
ROE	0.11	0.29	0.50	0.22
Checkbook Balance	0.16	0.06	0.14	0.00
Gross Cash Income	0.16	0.06	0.07	0.06
Accrual Net Farm Income	0.11	0.29	0.29	0.22
<i>Financial Training</i>				
Training Received	0.47	0.59	0.67	0.56

^a 1 = positive response (i.e., yes); 0 = negative response (i.e., no).

Table 7 reports mean responses of survey questions for computer use and specific purposes of farm financial records. More than 90% of the participants with higher bids use a computer for farm record keeping, while only 68% of participants with bids under \$15,000 do so. Participants with bids over \$15,000 had higher rates of computer ownership and computer usage for farm tasks. The no-bid participants had lower percentage computer ownership but seemed to better utilize the computer for farm tasks than participants with bids under \$15,000.

Participants were also asked if they use their farm records for tax purposes, enterprise analysis, securing loans, evaluating farm performance, aiding in investment decisions, budget preparation, and aiding in capital purchases. They were further asked if they use tax returns just for storage, to measure farm performance, to manage taxable income, and to decide how much income to transfer into family living expenses. Participants submitting bids of \$75,000 and greater tended to use records to evaluate farm performance and to aid in investment decisions more than lower bidders (table 7). Additionally, 90% or more of participants with bids of \$75,000 and greater used their financial records for all specified purposes except enterprise analysis and investment decisions. The no-bid participants all used records for tax purposes, but as a whole were under utilizing records in comparison other participants. Table 7 also shows that higher bidding participants tended to use their tax returns for more purposes other than storage. Sixty-one percent of the participants who did not submit a bid price used their tax records to measure farm performance. This result is not surprising since many of this group do not use some of the more sophisticated methods of measuring farm performance (table 6) and likely use tax returns as another measure of farm profitability.

Table 7. Mean^a Response for Computer and Farm Records Uses in Four Bid Ranges

Survey Question	Bid Range			
	\$0-14,999	\$15,000-75,499	\$75,000 and greater	No submitted bid
<i>Computer Use</i>				
Own a Computer	0.95	1.00	1.00	0.89
Personal Use	0.89	0.94	0.87	0.78
Farm Communications	0.63	0.94	0.80	0.78
Gather Farm Information	0.58	0.76	0.73	0.67
Purchase Farm Inputs	0.11	0.41	0.60	0.28
Keep Farm Records	0.68	0.94	0.93	0.78
<i>Uses of Records</i>				
Tax Purposes	1.00	1.00	0.93	1.00
Enterprise Analysis	0.65	0.65	0.80	0.61
Secure Loans	0.94	0.94	1.00	0.61
Evaluate Farm Performance	0.82	0.82	1.00	0.78
Investment Decisions	0.76	0.76	0.80	0.61
Budget Preparation	0.76	0.76	0.93	0.61
Capital Purchases	0.94	0.94	0.93	0.83
<i>Tax Record Use</i>				
Store Only	0.68	0.65	0.67	0.61
Measure Farm Performance	0.11	0.41	0.27	0.61
Manage Taxable Income	0.42	0.88	0.80	0.78
Decide Income Transfer				
Family Living Expenses	0.11	0.12	0.27	0.28

^a 1 = positive response (i.e., yes); 0 = negative response (i.e., no).

Conclusions

Since the 1930s, farmers have been exhorted to practice good financial record keeping due to the valuable information records can provide a farming operation. However, very little has been known regarding the value farmers place on their financial information and the determinants of

such value. This study used a willingness-to-accept experimental auction and survey questionnaire to elicit values from farmers for their farm financial records and to collect general record use and demographic information.

One message from this study is that, for the sample of farmers considered, farm records were extremely valuable. On average, individuals bid \$145,657 to give up their farm financial records. Results also suggest wide diversity in valuations with bids ranging from \$100 to \$2,500,000, with close to 50% of bids in the range of \$100,000 to \$500,000. Some of this diversity is explained by characteristics of the records and farmers: larger farmers tended to value their records more as did farmers who spent more time preparing their records. A larger percentage of farmers with financial training tended to value their records more as did farmers who used more accurate measures of performance and record keeping practices.

While the bids were wide in range, the majority were not for relative small amounts of money. The overall high nature of the bids submitted suggests that financial records are indeed very valuable to most farmers. While farm record keeping might not be a most preferable activity for a farmer, financial records are a vital part of the farm operation. The result that 25% of the participants refused to even submit a price for the sale of their records further suggests a high value to farmers. It appears most farmers have either heeded the words of agriculture educators or discovered for themselves the importance of financial information.

Financial record keeping is not a new concept that applies directly to field production practices or sophisticated technology which might keep it from being at the forefront of farmer conversations, agribusiness periodicals, Extension meetings, or even university research. While financial record keeping might not be agriculture's latest focus, it still has an important role in production agriculture as indicated by this study's results. Clearly, these findings provide

important information for public institutions debating the allocation of resources to encouraging and supporting maintenance of farm records and to new research and training on ways to better record and analyze financial records.

Another important message from this study is that experimental auctions can be used to elicit the values for extremely high-valued goods. This study also demonstrates some challenges in implementing experimental auctions for high-valued goods. For this study, the theoretical construct of interest was willingness-to-accept. We were interested in the value individuals placed on the records they owned. The study indicated that a quarter of the individuals were not willing to state a bid to sell their records. Such a finding is difficult to reconcile in that there is likely some amount of money that would indeed make an individual indifferent to having their records and not having them. What the result likely implies is that some individuals either do not understand the mechanism or are “protesting” the auction as conducted. That low-performing, older, and less-educated farmers were less likely to submit a bid is consistent with this hypothesis.

This study illustrates experimental auction methods need not be limited to low-valued goods or food. Despite the relatively high frequency of no-bidders, bidding behavior conformed to *a priori* expectations, i.e., farms with higher gross sales valued their records more highly, suggesting a reasonable degree of validity. This study also demonstrated how experimental auctions can be used to value a relatively complex good comprised of many sub-components and offered one method for separately valuing each sub-component.

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