Preference for Risk Management Information Sources: Implications for Extension and Outreach Programming

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This article examines farmers' preferences for various risk management information sources. Our results suggest that information from risk management experts, in-depth materials studied on their own, and popular press outlets tend to be preferred and are ranked highly by producers. Using a regression model to investigate farmer/farm attributes that affect preference for a particular risk management information source, we find that younger farmers with college education, higher leverage, assets greater than $1 million, risk-loving attitudes, and who have used professional services (marketing consultants) tend to prefer information from risk management experts, the Internet, and marketing clubs/other producers. On the other hand, producers who prefer self-study of educational materials and popular press information sources tend to be younger, with lower leverage levels, and have used fewer professional services.

Key Words: crop insurance, extension, information sources, outreach, risk management

One of the key characteristics of agriculture is the high level of production, market, and financial risks faced by producers. The presence of these risks has spurred development and availability of different agricultural risk management tools that help provide an income safety net for U.S. crop producers. To reduce production and/or marketing risks, for example, a producer has the option of using several risk-reducing instruments or strategies such as yield- or revenue-based crop insurance, futures hedging, and forward contracting. Each of these risk management tools has inherently different characteristics that make it more suited for particular crops, particular geographical areas, and/or particular farm business situations. Given the variety of risk management tools available, it is important, from a management perspective, for farmers to be aware of and understand the attributes of those alternative risk-reducing instruments. A better understanding of the different risk management tools available allows producers to more effectively choose the most appropriate risk management strategies for their own business situation (Schnitkey, Irwin, and Sherrick 2004).

Given producers' need to learn about alternative risk management tools, understanding the information sources that they rely on for learning is important. In the agricultural economics literature, there have been a number of studies that investigate farmers' preference for information sources that can be used for general farm business decision making (see Schnitkey et al. 1992, Ortmann et al. 1993, Patrick and Ullerich 1996, Gloy, Akridge, and Whipker 2000). Most of these studies have tried to empirically uncover relation-

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ships between farm/farmer characteristics and usefulness of (or preference for) different information sources. For overall farm decision making, these previous studies find that farm magazines are typically the most useful information source, and that farm size, farming experience, computer use, and farming enterprise type tend to strongly influence preference for particular information sources.

Note that the studies mentioned above examined preferences for information sources in the context of general farm decision making, not risk management decisions in particular. The literature on agricultural risk management includes a number of studies that have primarily focused on producers' demand for risk management education (Coble et al. 1999, Patrick et al. 2000, Vergara et al. 2002, Hall et al. 2003, Knight et al. 2003). These studies did not focus on information sources per se that can be used to deliver risk management educational programs. Knight et al. (2003), for example, examined only factors affecting crop producers' demand for more education about the following risk management tools: forward contracting, futures and options, crop yield insurance, crop revenue insurance, and general financial management. Hall et al. (2003) specifically examined factors that influence livestock producers' demand for more risk management education. Investigating the factors that affect preference for a risk management information source is very different from an analysis that examines the factors that affect demand for risk management education (i.e., a variety of information sources can be used to deliver an educational program in risk management).

In the agricultural risk management literature, only studies by Ngathou, Bukenya, and Chembezi (2005) and Vergara et al. (2001) have specifically examined preferences for risk management information sources. But these two studies have limited scope since they focus on limited resource farmers. In this regard, there is room in the literature to investigate factors that affect preference for particular risk management information sources using data from a more general sample of crop producers, drawn from a wider geographical area. Furthermore, although there have been a number of studies that examine factors affecting farmers' preference for different information sources used in general farm decision making (see Schnitkey et al. 1992, Ortmann et al. 1993, Patrick and Ullerich 1996, Gloy, Akridge, and Whipker 2000), only the aforementioned study by Ngathou, Bukenya, and Chembezi (2005) explicitly investigates factors affecting preference for risk management information sources.

This paper fills several gaps in the literature and contributes to further understanding about preferences for risk management information sources. Investigating the factors that affect farmers' preferences for different risk management information sources would also help various institutions involved in risk management education in agriculture, such as the Risk Management Agency (RMA) and the Cooperative Extension Service. Results from this study can be utilized by these agencies to more effectively tailor their risk management outreach and educational programs for better education delivery to their clientele. Better targeting of educational efforts could help farmers improve their risk management skills, and this could have a positive impact on their management decision making.

The objective of this study is to examine the factors that affect how farmers perceive the relative importance of alternative information sources for learning about risk management tools. As mentioned above, it is important to examine factors affecting producers' information preference in order to design sound outreach and education programs, but prior studies have not rigorously examined this issue in multiple states and by using a broader set of farmer types. Specific questions that this study addresses are the following: (i) what do farmers consider their most important information source in order to know more about crop risk management tools? and (ii) which producer characteristics influence the degree of preference among the different information sources?

Data Description and Estimation Strategy

This study uses data from a 1999 mail survey with geographic scope that includes farmers in Mississippi, Texas, Indiana, and Nebraska.[1] This

[1] Admittedly, the data set used for this analysis is nine years old and the socioeconomic environment of the producers surveyed may have changed over this period. In particular, the Internet and/or computer-based resources today are more accessible than they were nine years ago. However, we believe that insights from the analysis using this data set are still relevant given that there has been no study that com-.

survey was conducted as part of a project directed toward identifying the risk management objectives of agricultural producers and their perceptions and understanding of alternative risk management tools and strategies. The project was funded through a competitive grants program initiated by the Risk Management Agency (RMA) and the Cooperative State Research Education and Extension Service (CSREES) of the U.S. Department of Agriculture (USDA). Note that this data set has been extensively used in a number of previous studies addressing various risk management issues (see, for example, Hall et al. 2003, Knight et al. 2003, and Davis et al. 2005).

A total of 6,810 surveys were mailed to crop producers prior to the 1999 planting season (i.e., in the spring) in each of the states. A reminder card was sent two weeks following the first mailing, and a second mailing was sent to producers who had not returned the survey two weeks after the postcard reminder was sent. A total of 1,826 surveys were returned; out of these, 1,812 were qualified as complete to be usable, resulting in an effective response rate of 27 percent.

The survey targeted producers of major field crops: corn and soybeans in Indiana and Nebraska, cotton and soybeans in Mississippi, and cotton and sorghum in Texas. Survey respondents provided information about demographics, business characteristics, risk perceptions, alternative risk management practices, agricultural policy preferences, and risk management educational preferences. In the risk management section of the survey, responses from farmers provided rankings that indicated their preferred information source to learn more about crop insurance and other risk management tools.

A Lickert-type scale ranging from 1 (low preference) to 5 (strong preference) was used to provide the rankings. The risk management information sources ranked (i = 1, …, 5) included information from (i) in-depth training by risk management experts, (ii) in-depth materials to study on own time, (iii) popular press like farm magazines or newsletters, (iv) Internet- or other computer-based education modules, and (v) marketing clubs or other groups of producers. The demographic information included age of the operator and level of formal education, and the business characteristics section collected information about size of the farm, major crops, market value of the assets of the operation, financial leverage, off-farm income, expenses paid for professional farm management and marketing services, and a description of the type of ownership of the farm. The survey also elicited information about risk preferences of the operator, and whether the operation was being insured using private insurance products and/or federal crop insurance products. These demographic and farm characteristic variables serve as the explanatory factors in the estimation strategy described below.

Recall that the main objective of the study is to examine the factors that affect producers' preferences for alternative risk management information sources. Given this objective, we can empirically specify the problem for a particular information source i (i = 1,… , 5) as follows:

$$Y_j^i = x_j'\beta + e_j^i, \tag{1}$$

where Y_j^i is a variable that reflects the jth producer's (j = 1, …, n) preference for (or ranking of) a particular information source i, x_j represents the explanatory factors (i.e., farm and farmer characteristics), β is a vector of unknown parameters to be estimated, and e_j^i is a random error term. We use ordinary least squares (OLS) regression procedures to estimate the unknown parameters in equation (1).[2] Standard OLS diagnostic/corrective procedures are conducted to en-

prehensively and specifically examines farmers' preferences for risk management information sources. Notwithstanding this argument, the limitation of the data set should always be kept in mind in interpreting our results, especially the ones related to preferences for the Internet and computer-based resources.

[2] We initially estimated the unknown parameters in equation (1) using an ordered probit (OP) procedure. However, one reviewer compellingly argued that attitude/preference measures (such as the Lickert-type scale used in this study) can be considered continuous and as such an ordinary least squares (OLS) regression can be used as an estimation strategy as well. The reviewer further pointed out that attitude measures are measured on an interval scale, which justifies the use of OLS regression analysis. Given this reviewer's recommendations on this matter and in the spirit of conciseness, only the OLS regression results are presented in this article (but the OP results are available from the authors upon request). Importantly, the results from the two estimation procedures tend to be very similar (i.e., the significant variables and the signs of these significant variables are the same regardless of which estimation procedure is used). The only difference between the results is the interpretation of the marginal effects and their magnitudes. But this difference in marginal effects interpretation is due simply to the nature of how the independent variable is treated in both procedures (i.e., cardinal in OLS and ordinal in OP) and the estimation approach used due to this treatment (i.e., linear estimation in OLS and non-linear estimation in OP). See footnote 5 for more on this issue.

sure that there are no inference problems associated with heteroskedasticity and multicollinearity (Greene 2003).

Empirical Specification

The dependent variable used in this study is an ordered response signifying a farmer's ranking of the importance of five risk management information sources. As indicated above, a particular producer ranks a particular information source based on a Lickert-type scale, which ranges from 1 (low preference) to 5 (strong preference), and this serves as our dependent variable in the OLS regression analysis.

The independent variables in the regression model can be grouped into two categories: (i) farmer characteristics and (ii) farm attributes. The farmer characteristic variables included in the specification are age (*age*), education level (*college education*) (equal to 1 if the operator has college-level education), and risk-aversion level of the operator (*risk attitude*) measured in a Lickert-type scale that ranges from 1 to 5 (equal to 1 if much less willing to take risk, and equal to 5 if much more willing to take risk).[3] Age and education are included since past studies on information use in agriculture have shown that farming experience (as proxied by age) and education levels strongly influence information preference (Ford and Babb 1989, Schnitkey et al. 1992, Gloy, Akridge, and Whipker 2000). Since we are interested in factors affecting risk management information sources per se, a farmer's attitude towards risk is expected to affect his/her information preference. This is further supported by Goodwin and Schroeder (1994) and Knight et al. (2003), who have argued that risk attitudes significantly affect demand for risk management education.

The farm attribute variables included in the model are farm size (*farm size*), measured in acres of cropland, ownership of land (*ownership*), leverage level (*leverage*), off-farm income (*off-farm income*), total market value of assets (*assets > $1 million*) (equal to 1 if greater than $1 million), purchase of private insurance covering hail and fire losses (*private crop insurance*) (equal to 1 if insurance was purchased or planned to be purchased for the 1998 and 1999 crop season), purchase of federal crop insurance (*federal crop insurance*) (equal to 1 if insurance was purchased or planned to be purchased), and use of professional farm services represented by the variables *farm manager cost*, *marketing consultant cost*, and *computerized information cost*. The following "major crop" variables are included in the specification as well: *corn as a major crop*, *cotton as a major crop*, *sorghum as a major crop*, *soybean as a major crop*, and *wheat as a major crop*. The preceding variables are assigned a value of 1 if the crop in the variable name has the largest planted acreage. State dummy variables for Mississippi, Nebraska, and Texas were included in the specification to control for state-level fixed effects (Indiana is the omitted state). Brief definitions of the variables used in this study and the corresponding summary statistics are reported in Table 1.

Farm size is included in the specification because a number of past studies have shown it to be a significant determinant of information preferences (Ford and Babb 1989, Schnitkey et al. 1992). The leverage, off-farm income, and asset value variables are included because they signify financial strength of the farm business, and this fundamentally affects risk-bearing capacity and consequently attitudes toward risk management information sources (Goodwin and Schroeder 1994, Knight et al. 2003, Davis et al. 2005). The crop insurance dummy variables are included to signify prior use of a risk management tool, which was shown by Knight et al. (2003) to affect risk management education demand. The variables reflecting use of professional farm services are included because use of such services was shown by Ortmann et al. (1993) to significantly influence information preferences. The major crop variables in the specification represent the "farm type" or "enterprise type" variables that were shown to substantially affect information preferences in past studies (Ford and Babb 1989, Schnitkey et al. 1992, Gloy, Akridge, and Whipker 2000).

[3] There are a number of ways to elicit and specify risk attitudes in empirical models, but self-assessed Lickert-type rating scales of risk attitudes have been shown to be reliable and valid (Pennings and Garcia 2001).

Table 1. Variable Definition and Summary Statistics

Variable	Definition	No. of Obs.	Mean	Std. Dev.	Min.	Max.
DEPENDENT VARIABLES						
Risk management experts	Preference for this information source: 1 = low preference to 5 = strong preference	981	2.990	1.333	1	5
Self-study	Preference for this information source: 1 = low preference to 5 = strong preference	984	3.138	1.220	1	5
Popular press	Preference for this information source: 1 = low preference to 5 = strong preference	998	3.113	1.105	1	5
Internet	Preference for this information source: 1 = low preference to 5 = strong preference	972	2.317	1.242	1	5
Marketing clubs/other farmers	Preference for this information source: 1 = low preference to 5 = strong preference	975	2.589	1.302	1	5
INDEPENDENT VARIABLES						
Age	Age in years of operator	1042	51.795	12.105	19	89
College education	1 if operator has college education, 0 otherwise	1047	0.619	0.486	0	1
Farm size	Acres of cropland	1061	1312.712	1392.084	46	18,000
Ownership	Percentage of cropland owned by operator	1061	42.989	35.485	0	100
Leverage	Proportion borrowed from total investment	1064	0.184	0.388	0	1
Off-farm income	Proportion of income that comes from off-farm sources	1010	0.570	0.495	0	1
Risk attitude	Ranking from 1 to 5, with 5 much more willing to accept risk	976	3.246	0.896	1	5
Private crop insurance	1 if private crop insurance was purchased, 0 otherwise	1032	0.613	0.487	0	1
Federal crop insurance	1 if federal crop insurance was purchased, 0 otherwise	1036	0.274	0.446	0	1
Assets > $1 million	1 if total assets are greater than $1 million, 0 otherwise	1021	0.415	0.493	0	1
Farm manager cost	Expenses on services of professional farm managers	943	794.029	5930.709	0	100,000
Marketing consultant cost	Expenses on services of marketing consultants	955	390.205	1579.151	0	20,000
Computerized information cost	Expenses on computerized information services	970	768.611	12843.270	0	400,000
Corn as major crop	1 if corn is the major crop of the operation, 0 otherwise	1064	0.553	0.497	0	1
Cotton as major crop	1 if cotton is the major crop of the operation, 0 otherwise	1064	0.111	0.314	0	1
Sorghum as major crop	1 if sorghum is the major crop of the operation, 0 otherwise	1064	0.031	0.173	0	1
Soybean as major crop	1 if soybean is the major crop of the operation, 0 otherwise	1064	0.405	0.491	0	1
Wheat as major crop	1 if wheat is the major crop of the operation, 0 otherwise	1064	0.037	0.190	0	1
Mississippi	1 if farm is in Mississippi, 0 otherwise	1064	0.188	0.391	0	1
Nebraska	1 if farm is in Nebraska, 0 otherwise	1064	0.268	0.443	0	1
Texas	1 if farm is in Texas, 0 otherwise	1064	0.122	0.327	0	1
Indiana	1 if farm is in Indiana, 0 otherwise	1064	0.420	0.493	0	1

Results

Histograms and Means of Farmers' Information Preferences

Figures 1 to 5 show histograms that depict the distribution of farmers' preferences for each crop insurance information source investigated in this study. The mean preference rankings for the five different information sources are shown in Table 1 (in the top panel labeled "Dependent Variables"). In general, these histograms and means indicate that information from risk management experts, in-depth materials (studied on the farmer's own), and farm magazines/newsletters tend to be preferred by the surveyed producers. These are also the information sources with the highest mean preference ranking (see Table 1). A simple Pearson correlation analysis also indicates that producers who rank information from in-depth materials (to be studied on their own) highly tend to also rank popular press information highly, and vice-versa (see Table 2).[4]

On the other hand, there are still a large proportion of producers that seem not to prefer information from the Internet and from marketing clubs/ other groups of producers. These two information sources have the lowest mean preference ranking (see Table 1). One caveat that must be emphasized here is that the data set used in the analysis is about nine years old and the extent of Internet use and access may have increased significantly since the survey was conducted. Thus, the lower preference for Internet use should be interpreted with caution.

Note that histograms and mean rankings alone would not show which farmer characteristics significantly affect the farmers' preference levels. The results from regression models (i.e., either an ordered probit and/or an OLS model) give more useful insights that could be used by the RMA and the Cooperative Extension Service in planning and targeting their educational programs and services.

Farmer Characteristics Affecting Information Preferences

The parameter estimates from the OLS regression are presented in Table 3. Using standard OLS diagnostic procedures [i.e., White test and variance inflation factors (VIF)], a modest level of heteroskedasticity (i.e., significant at the 10 percent level) was detected for some of the information preference regression equations, but there was no evidence of severe multicollinearity. Thus, to ensure proper inference, heteroskedasticity-robust standard errors are used to calculate the standard errors and the p-values associated with parameter estimates presented in Table 3 (Greene 2003). The signs and magnitudes of the significant variables are discussed in detail below.[5]

[4] One reviewer pointed out that if the information preference rankings are indeed treated as ordinal (rather than cardinal), then the calculation of mean preference rankings and the use of simple Pearson correlation measures would not be meaningful because these measures assume cardinality of the variables being studied. This would have been inconsistent with the use of an ordered probit (OP) estimation procedure had it been used to estimate the unknown parameters in equation (1), where ordinality of the attitude/preference measure is explicitly acknowledged. However, if the attitude/preference measure is indeed treated as an ordinal variable, using the median (as opposed to the mean) would be a meaningful measure of central tendency. Further, a Spearman rank correlation measure and/or Kendall's Tau correlation measure can be used (instead of the Pearson correlation measure) to provide meaningful correlation measures for ordinal variables. But note that the use of means and Pearson correlation analysis are consistent with the OLS results presented in this article (which assumes cardinality of the dependent variable).

[5] The OLS model inherently assumes that the dependent variable is continuous and, with this linear estimation procedure, the parameter estimates can then be directly interpreted as marginal effects (that are constant at any given value of the independent variable of interest). However, the magnitudes of the parameter estimates in the ordered probit (OP) model are not directly comparable to the OLS model. An ordered probit approach assumes that the dependent variable is a non-continuous variable with an ordinal ranking. It is also estimated using a non-linear estimation procedure, which means that the marginal effect from an ordered probit model is non-constant (i.e., it changes for different values of the independent variable of interest). Therefore, the interpretation of the marginal effects in an ordered probit procedure is different from an OLS approach. In an ordered probit approach, a marginal effect has to be calculated for each information source at a certain level (i.e., at the mean of x). In our case, the marginal effect is calculated for the given x values in each observation, and then averages across observations are taken (Greene 2003). The results of these marginal effect calculations for the OP estimation are available from the authors upon request.

We then compared the parameter estimates from the OLS (which can be directly interpreted as marginal effects) and the marginal effects from the OP (for ranking = 5) to determine if there would be a big difference in the results. As mentioned above (footnote 4), the Ordered Probit (OP) estimation procedures also yielded results that are very similar to the OLS regression reported here. The significant variables and the signs of these significant variables are the same regardless of which estimation procedure is used. In addition, the magnitude of the marginal effects in both estimation procedures tends to be small (i.e., less than 1.0). This suggests that even if there are variables that significantly affect information preference, their practical magnitudes (in general) tend to be modest. However, there are significant variables that have larger magnitudes and larger practical economic effects (e.g., *leverage*, *assets > $1 million*) relative to other significant variables (e.g., *marketing consultant cost*). A more detailed discussion of the magnitudes of each significant variable is laid out in the results section of the text.

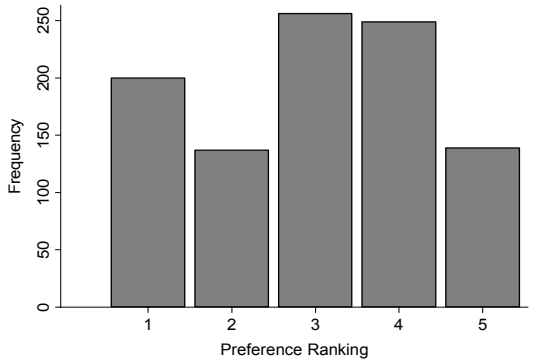

Figure 1. Histogram of the Preference for In-Depth Training by Risk Management Experts

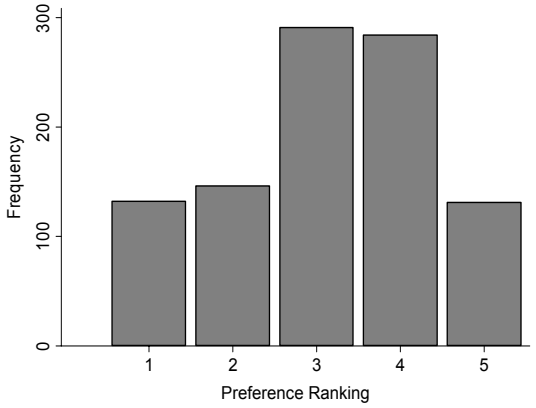

Figure 2. Histogram of the Preference for Self-Study of In-Depth Materials

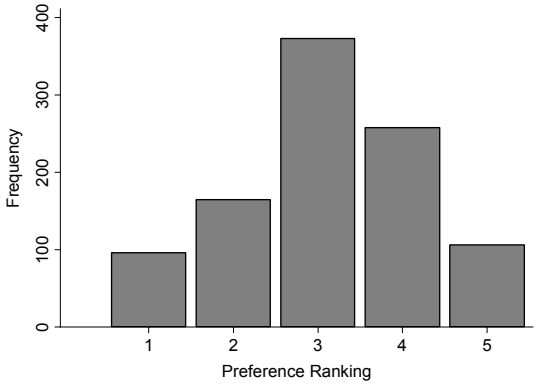

Figure 3. Histogram of the Preference for Popular Press (farm magazines, newsletters)

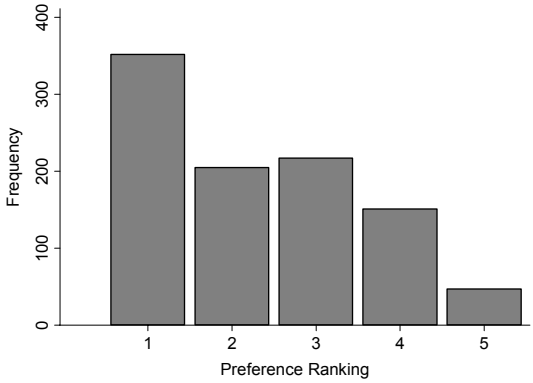

Figure 4. Histogram of the Preference for Internet- or Computer-Based Information

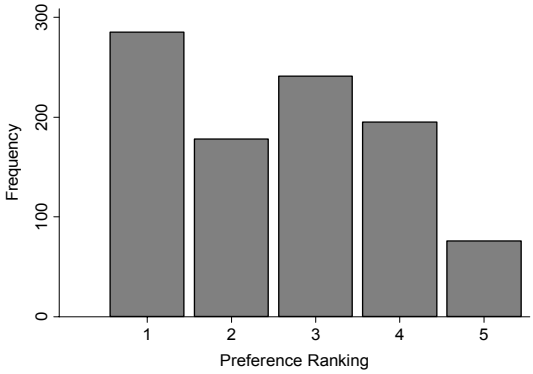

Figure 5. Histogram of the Preference for Information from Marketing Clubs or Other Farmers

One farmer characteristic that has a consistent effect across all information sources is age. This is fairly consistent with results of previous literature (see Knight et al. 2003, Gloy, Akridge, and Whipker 2000). Our results indicate that age has a statistically significant but modest negative effect on the preference for any information source. This suggests that older producers tend to not place high value on any information about risk management tools. This makes sense since older producers tend to have more experience and more skills in managing the risks in their farms and a shorter time horizon in which to capture the benefits of an enhanced knowledge base. Our results suggest that extension and outreach programs on risk management may be better targeted for younger, less experienced producers.

Other farmer characteristics that affect a couple of information sources (but not all) are the college education and risk attitude dummy variables. For example, our results indicate that farmers

Table 2. Pearson Correlation Analysis of Risk Management Information Rankings

	Risk Management Experts	Self-Study	Popular Press	Internet	Marketing Clubs/ Other Farmers
Risk management experts	1.0				
Self-study	0.26	1.0			
Popular press	0.04	0.42	1.0		
Internet	0.32	0.28	0.21	1.0	
Marketing clubs/other farmers	0.41	0.11	0.07	0.33	1.0

with college education tend to prefer information from risk management experts and the Internet. Farmers that are risk-loving also tend to prefer information from these two sources, in addition to self-study of in-depth materials. In addition, note that the magnitude of the college education and risk attitude effects tends to be larger than the age variable (i.e., ranging from 0.10 to 0.39). College-educated farmers relying on risk management experts and on the Internet is consistent with the literature in the sense that these types of farmers are more receptive to using more complex and specialized information from these sources (Gloy, Akridge, and Whipker 2000). College-educated producers tend to be more comfortable with computers as well (Amponsah 1995). The positive effect of the risk attitude dummy indicates that farmers who are willing to face higher risk tend to utilize information from risk management experts and the Internet. The use of information from these sources (even though these farmers tend to embrace risk) may just be "due diligence" in order not to make "uncalculated" management decisions.

Farm Attributes Affecting Information Preference

Some farm attributes that we found to positively affect preference for several information sources in the OLS regression approach are leverage levels, assets greater than $1 million, and use of professional services. In particular, farmers with higher leverage, with assets greater than $1 million, and who have used professional services (marketing consultants) tend to prefer information from risk management experts, the Internet, and marketing clubs/other producers. The magnitude of the marginal effects for the variables associated with leverage and assets greater than $1 million tends to be larger (i.e., from 0.31 to 0.48) relative to the marginal effects of the professional services variable (i.e., typically < 0.001). These results suggest that farmers with larger operations tend to prefer information from risk management experts, the Internet, and marketing clubs/other producers.

Producers with corn as a major crop also seem to prefer information from risk management experts, self-study, and the Internet. The magnitude of the corn dummy effect is fairly similar to the effect of the leverage variable (i.e., ranging from 0.25 to 0.36). Somewhat counterintuitively, however, the federal crop insurance dummy tends to reduce preference for information from risk management experts and the Internet (but this effect tends to be modest). The seemingly counterintuitive sign can be explained by arguing that farmers who have used federal crop insurance instruments already had experience with these risk management tools, reducing their need for information from these sources. In addition, it can be argued that crop insurance use reduces risk and consequently makes additional risk management information less valuable.

Overall, the state dummy variables did not tend to be statistically different from the omitted state variable (*Indiana*) in terms of preference for information sources (except for information from risk management experts). This suggests that preferences for risk management information are fairly homogeneous across geographical regions.

The farm attributes that tend to negatively affect preference for self-study of materials and popular press are leverage and professional ser-

Table 3. OLS Parameter Estimates (dependent variable = level of preference for a crop insurance information source)

	Risk Management Experts		Self-Study		Popular Press		Internet		Marketing Clubs/ Other Farmers	
Variable	Coeff.	P-val.	Coeff.	P-val.	Coeff.	P-val.	Coeff.	P-val.	Coeff.	P-val.
Age	-0.01	**0.03**	-0.01	**<0.01**	-0.01	**<0.01**	-0.02	**<0.01**	-0.02	**<0.01**
College education	0.39	**<0.01**	0.09	0.33	-0.05	0.59	0.27	**<0.01**	0.14	0.15
Farm size	-0.00004	0.15	-0.00002	0.44	-0.00002	0.62	-0.00002	0.59	0.00003	0.48
Ownership	-0.002	0.14	-0.001	0.35	0.002	**0.09**	0.0002	0.90	-0.0009	0.51
Leverage	0.17	0.15	-0.12	0.32	-0.21	**0.05**	-0.08	0.51	0.35	**<0.01**
Off-farm income	0.11	0.27	0.01	0.89	0.15	**0.07**	0.16	**0.07**	0.22	**0.02**
Risk attitude	0.12	**0.05**	0.10	**0.07**	0.06	0.21	0.17	**<0.01**	0.04	0.44
Private crop insurance	-0.11	0.22	-0.12	0.18	0.10	0.23	-0.14	**0.09**	0.16	**0.09**
Federal crop insurance	-0.20	**0.08**	-0.14	0.19	-0.04	0.65	-0.17	**0.09**	-0.04	0.69
Assets > $1 million	0.48	**<0.01**	0.16	0.12	-0.0006	0.99	0.31	**<0.01**	0.26	**0.02**
Farm manager cost	-0.00001	**0.10**	-0.000004	0.67	0.000007	0.43	-0.000002	0.77	-0.00001	**0.01**
Marketing consultant cost	0.0001	**<0.01**	-0.00001	0.67	0.000006	0.81	0.00006	**0.06**	0.00007	**<0.01**
Computerized information cost	0.000004	**<0.01**	-0.000001	**0.03**	-0.000003	**<0.01**	-0.0000008	0.18	0.000003	**<0.01**
Corn as major crop	0.36	**0.01**	0.29	**0.03**	0.17	0.15	0.25	**0.08**	0.18	0.21
Cotton as major crop	-0.12	0.60	0.19	0.35	0.25	0.16	0.43	**0.04**	0.06	0.78
Sorghum as major crop	-0.22	0.50	0.21	0.54	0.09	0.78	0.37	0.31	0.01	0.98
Soybean as major crop	0.13	0.30	0.12	0.31	0.04	0.72	0.45	**<0.01**	0.13	0.35
Wheat as major crop	0.58	**0.05**	0.25	0.35	0.36	0.16	0.54	**0.10**	0.42	0.18
Mississippi	0.42	**0.01**	0.13	0.41	0.07	0.63	0.13	0.38	0.17	0.27
Nebraska	-0.06	0.56	-0.18	**0.09**	0.17	**0.10**	0.07	0.51	0.05	0.62
Texas	0.50	**0.02**	0.08	0.68	0.01	0.94	0.26	0.18	0.58	**<0.01**
Intercept	2.42	**<0.01**	3.29	**<0.01**	3.13	**<0.01**	2.10	**<0.01**	2.51	**<0.01**
No. of Observations	777		779		784		774		776	
Log-likelihood	-1256.63		-1224.20		-1154.32		-1191.48		-1255.13	
R-squared	0.154		0.045		0.044		0.154		0.121	
Akaike Info. Criteria (AIC)	3.29		3.20		3.00		3.14		3.29	
Bayesian Info. Criteria (BIC)	-2511.60		-2591.70		-2769.64		-2619.02		-2506.97	

Note: P-values in bold indicates that the corresponding variable is statistically significant at the 10 percent level..

vices (i.e., farmers with higher computer information costs). On the other hand, ownership tends to increase farmer preference for information from the popular press. Note, however, that the professional service and ownership effects on the preference for self-study of materials and popular press outlets tend to be small. Farmers with corn as a major crop also prefer to use information from self-study materials and the popular press. This is consistent with the higher mean preference rankings for self-study (3.15) and popular press (3.16) relative to information from risk management experts (3.00), the Internet (2.26), and other farmers (2.51).

Conclusions and Implications

This article examines farmers' preferences for various risk management information sources and the factors that affect those preferences. Our results suggest that information from risk management experts, in-depth materials studied on the farmer's own, and popular press outlets (farm magazines/newsletters) tends to be preferred and ranked relatively high by the surveyed producers. On the other hand, there are still some producers that seem not to prefer information from the Internet and from marketing clubs/other groups of producers, and who consequently rank these two information sources at a lower level (on average).

Using an OLS regression model to investigate farmer/farm attributes that affect preference for a particular information source, we find that younger farmers with higher college education, higher leverage, assets greater than $1 million, and risk-loving attitudes, and who have used professional services (marketing consultants) tend to prefer information from risk management experts, the Internet, and marketing clubs/other producers. On the other hand, our results suggest that producers who prefer self-study of educational materials and popular press information sources tend to be younger persons with lower leverage levels and who have used fewer professional services. Older producers do not prefer any of the information sources examined in this study, and this seems to suggest that risk management education and outreach programs should be targeted more toward younger farmers.

From an extension programming perspective, our results suggest that younger, well-educated farmers with larger operations (i.e., highly leveraged and with a larger asset base) and who are more willing to take risks will be more responsive to the typical delivery mechanisms being used by risk management extension educators—in-depth training by risk management experts and Internet delivery of educational materials. On the other hand, there is some indication from our results that younger producers with smaller operations may tend to prefer self-study of educational materials and the popular press. Given these results, a risk management extension educator can feasibly structure his or her program by using in-depth training and Internet delivery mechanisms to provide information to producers with larger operations, and by using popular press outlets and mailing of educational materials (for self-study) to serve his or her farmer clientele with smaller operations.

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