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**THE EVOLUTION OF RISK MANAGEMENT EDUCATION IN THE U.S.:
AN EVALUATION OF PAST AND PRESENT DEMAND**

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The Evolution of Risk Management Education in the U.S. : An Evaluation of Past and Present Demand



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INTRODUCTION

In this decade, U.S. crop producers have faced unprecedented changes in their farm business risk environment. The Agricultural Risk Protection Act (ARPA) of 2000 and the 2002 Farm Bill enabled crop producers to gradually move toward increased market orientation while taking more risks. The 2008 Farm Bill continued price and income support programs of the prior legislation while expanding the set of policy options available to crop producers.

Given the complexities of policy options and risk management instruments available to U.S. crop producers, the Risk Management Agency of the USDA and state and federal extension services have directed substantial resources toward risk management education over the last decade. Moving forward, it is important to understand the risk management training needs of producers in order to design effective risk management education programs and efficiently allocate resources.

OBJECTIVE

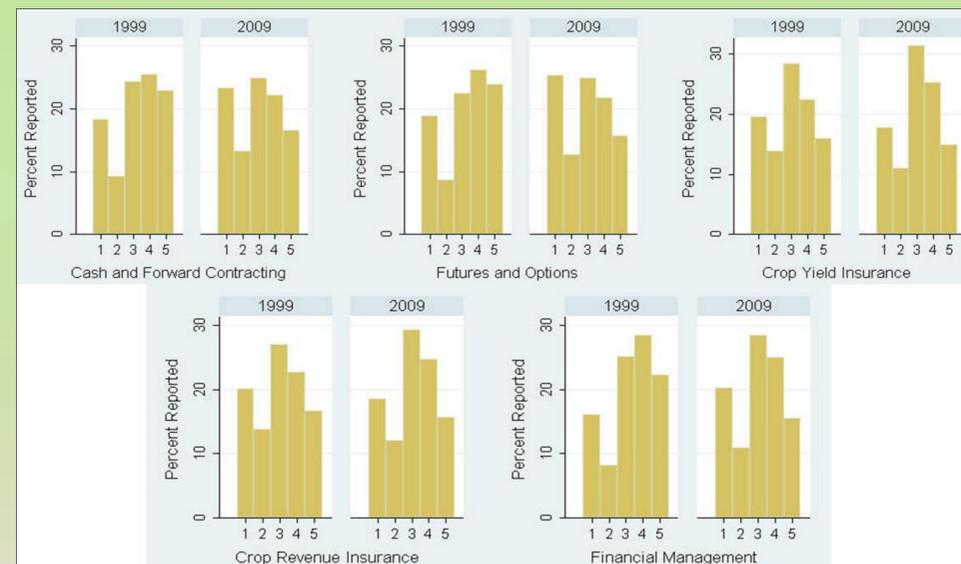
This study evaluates crop producers' educational needs and interest in additional risk management training focusing on five areas: cash and forward contracting, futures and options, crop yield insurance, crop revenue insurance, and financial management. Specifically, this study examines the influence of individual factors on crop producers' level of interest in the alternative risk management tools as well as the changes in the influential factors between two survey periods. This research will provide the RMA and extension providers important and timely information for developing and tailoring risk management education programs that effectively address current risk issues faced by crop producers.

METHODS AND DATA

A 5 point Likert-type response was used to elicit the level of interest crop producers have in obtaining additional information on effective use of alternative risk management instruments. The response variable is ordered and discrete with "low interest" ("strong interest") corresponding to the lower (higher) end of the range. Ordered response models (i.e. ordered probit/logit) have been used in many recent social science studies with the same type of response variable to describe an underlying continuous unobservable preference. This model allows evaluation of likelihood of outcomes (e.g. the likelihood of an individual stating a particular preference). However, crop producers utilize several risk management instruments and modeling each independently ignores possible simultaneity in levels of interest. A modeling approach that accounts for possible simultaneity among risk management instruments is the multivariate ordered probit which is estimated using simulated maximum likelihood estimation.

This study uses information obtained from surveys conducted in 1999 and 2009 that includes producers of major field crops in Texas, Mississippi, Indiana, Nebraska, Wisconsin, and North Carolina. A total of 2,899 usable survey instruments constitutes the sample size of the analysis, of which 62% are from the 1999 survey. Data collected include information on general farm business and farm-operator characteristics and farm operator perceptions or risks and their need for risk management training.

Figure 1. Comparison of Reported Crop Producers' Level of Interest in Additional Information/ Training on Risk Management Tools by Survey Year



RESULTS

There are modest differences between periods in the pattern of reported level of interest in education on different risk management instruments (Figure 1). There is a decrease in the overall level of interest in cash and forward contracting, futures and options, and in financial management. This decline may reflect success in educational programs over the interceding ten year period between the two surveys.

Age consistently remains to be a limiting factor on interest in additional education particularly on futures and options and financial management. A comparison of the estimated results between periods shows that cropland acres were not statistically significant in models of futures and options, crop revenue insurance, and financial management in 2009 (Table 1). The insignificance of cropland acres in 2009 may be explained by the huge difference between the average reported cropland acres in the 2009 survey (657 acres) and in 1999 survey (1,396 acres).

The difficulties in the credit market succinctly explain why percent of farm capital investments borrowed continues to have a significant influence on interest for financial management education. Lender recommendations remain a very influential factor in determining interest in obtaining information/training in futures and options, and in crop yield and revenue insurance. Prior training on cash and forward contracts and in futures and options also influences interest in these instruments.

Crop producers in 2009, generally perceive commodity price and input markets as an important source of risk and this perception is highly influential on having interest in most of risk management tools. Moreover, perception of land rent risk highly influences interest in use of financial management instruments. Risk aversion (avoidance) attitudes remain highly significant on crop revenue and financial management models.

Changes in the proportion of crops planted between periods also explain the differences in the significance of this factor in influencing interest in additional education. The proportion of corn acres is highly significant in cash and forward contracting and futures and options models compared to the previous period where it is highly significant in crop yield and revenue insurance. The proportion of cotton and wheat acres was also found to be highly significant in cash and forward contracting in 2009 while it remains significant in crop revenue insurance models for both periods. The proportion of soybean acres was also highly significant in all instruments except for financial management in 2009.

CONCLUSIONS

- Young crop producers may be more receptive to additional education/training particularly in cash and forward contracting and in financial management.

- Lenders remain highly influential to crop producers.

- Overall, the significance of perceptions on sources of risk such as price and input costs underscores the importance of risk management education to crop producers.

- In general, corn producers appear to be shifting toward being interested in training on cash and forward contracting and futures and options as risk mitigating instruments. Cotton and wheat producers are also shown to have interest in cash and forward contracting as well as crop revenue insurance.

Table 1. Factors Influencing Crop Producers' Level of Interest on Additional Information/ Training on Risk Management Tools: Estimated Multivariate Ordered Probit Model

Explanatory Variables ^a	Cash and Forward Contracting		Futures and Options		Crop Yield Insurance		Crop Revenue Insurance		Financial Management	
	1999	2009	1999	2009	1999	2009	1999	2009	1999	2009
	Coefficient		Coefficient		Coefficient		Coefficient		Coefficient	
Operator Age	0.0003 (0.0012) ^b	-0.0040 (.0038)	-0.1480*** (0.0029)	-0.0101** (0.0038)	-0.0014 (0.0029)	0.0012 (0.0037)	-0.0015 (0.0028)	-0.0011 (0.0037)	-0.0151*** (0.0028)	-0.0083* (0.0037)
College Education	0.0365 (0.0688)	0.1360 (0.0886)	0.1720* (0.0693)	0.125 (0.0890)	0.116 (0.0689)	0.158 (0.0880)	0.1690* (0.0689)	0.1940* (0.0879)	0.105 (0.0669)	0.2250** (0.0864)
Prior Training	0.1960*** (0.0536)	0.2340** (0.0756)	0.2470*** (0.0548)	0.3290*** (0.0777)	0.0120 (0.0557)	0.0633 (0.0762)	-0.00832 (0.0549)	0.101 (0.0736)	Na ^c	Na ^c
Cropland Acres	0.0705 (0.0428)	0.0368 (0.0495)	0.1120** (0.0432)	0.0279 (0.0496)	0.0561 (0.0427)	-0.0502 (0.0492)	0.0995* (0.0428)	-0.0165 (0.0492)	0.1170** (0.0415)	0.0269 (0.0482)
Percent Farm Capital Borrowed	0.0047*** (0.0011)	0.0005 (0.0015)	0.0052*** (0.0011)	-0.0006 (0.0016)	0.0023* (0.0011)	-0.0005 (0.0015)	0.0028** (0.0011)	0.0004 (0.0015)	0.0048*** (0.0010)	0.0031* (0.0015)
Recommended by Lender	0.0547 (0.0566)	0.159 (0.0825)	0.1330* (0.0580)	0.1740* (0.0841)	0.178** (0.0581)	0.264*** (0.0696)	0.193*** (0.0573)	0.264*** (0.0672)	Na ^c	Na ^c
Perceived High Price Risk	0.0990 (0.0879)	0.3160** (0.0995)	0.104 (0.0884)	0.3660*** (0.0999)	0.0986 (0.0879)	0.164 (0.0992)	0.4140*** (0.0881)	0.2500* (0.0992)	0.155 (0.0868)	0.2000* (0.0971)
Perceived High Yield Risk	-0.0393 (0.0795)	0.0775 (0.0891)	0.0390 (0.0799)	-0.0186 (0.0894)	0.5530*** (0.0804)	0.0932 (0.0888)	0.3250*** (0.0798)	0.0971 (0.0887)	0.0960 (0.0781)	0.1140 (0.0878)
Perceived High Input Cost Risk	0.0789 (0.0681)	0.3870** (0.123)	-0.0001 (0.0685)	0.193 (0.123)	0.0714 (0.0680)	0.3460** (0.122)	0.0541 (0.0680)	0.2860* (0.122)	0.0525 (0.0664)	0.3980*** (0.121)
Perceived High Land Rent Risk	0.1050 (0.0669)	0.0987 (0.0876)	0.0398 (0.0673)	0.0910 (0.0879)	0.1850** (0.0666)	0.156 (0.0873)	0.1870** (0.0666)	0.1160 (0.0871)	0.1550* (0.0656)	0.1710* (0.0857)
Risk Avoidance	0.1920** (0.0632)	0.1350 (0.1010)	0.2170*** (0.0637)	0.160 (0.101)	0.2460*** (0.0630)	0.187 (0.100)	0.2750*** (0.0631)	0.2010* (0.100)	0.1640** (0.0617)	0.2480* (0.0990)
Proportion of Corn Acres	0.4410 (0.247)	0.7030** (0.2150)	0.380 (0.248)	0.5640** (0.215)	0.8440*** (0.245)	0.310 (0.211)	0.8550*** (0.245)	0.356 (0.211)	0.310 (0.235)	0.147 (0.208)
Proportion of Cotton Acres	0.0732 (0.2090)	0.6590* (0.260)	-0.200 (0.211)	0.305 (0.261)	0.349 (0.208)	0.282 (0.261)	0.4470* (0.208)	0.5160* (0.261)	-0.168 (0.198)	0.0232 (0.257)
Proportion of Soybean Acres	0.260 (0.239)	0.8070*** (0.218)	-0.514 (0.240)	0.6500** (0.218)	0.289 (0.239)	0.5150* (0.216)	0.444 (0.238)	0.6950** (0.216)	-0.310 (0.226)	0.410 (0.215)
Proportion of Wheat Acres	0.228 (0.297)	0.7330** (0.252)	-0.120 (0.300)	0.348 (0.252)	0.398 (0.291)	0.437 (0.251)	0.6740* (0.292)	0.5570* (0.250)	0.129 (0.281)	0.0652 (0.244)
N	1,380	754								
Log-Likelihood	-8,070.90	-4,172.10								

^aOnly significant variables are presented. Model estimation includes state dummy variables to control for state effects.

^bNumbers in parentheses are asymptotic standard errors. *p<0.05, **p<0.01, ***p<0.001.

^cVariable was not available for inclusion in the model