

# Student Preferences for Agricultural Economics Degree Names



**Jill J. McCluskey**  
**Department of Agricultural Economics**  
**Washington State University**  
**Pullman WA 99164-6210**

**Maria L. Loureiro**  
**Department of Agricultural and Resource Economics**  
**Colorado State University**  
**Fort Collins, CO 80526**

**Philip Wandschneider**  
**Department of Agricultural Economics**  
**Washington State University**  
**Pullman WA 99164-6210**

## Abstract

As the number of students with farm backgrounds continues to decline, agricultural and applied economics programs must be able to attract students with different backgrounds to serve industry and students' needs. A concern is that degree names with the terms "agricultural" or "agribusiness" may distance many students with non-farm backgrounds. All undeclared undergraduate students at Washington State University (WSU) were surveyed in order to evaluate their potential interest in a proposed environmental and resource economics degree and their perceptions and preferences for degree names. In this survey, WSU undergraduates were asked a variety of questions related to their subject interests, background, and demographic information. They were confronted with different potential degree names for the same proposed curriculum in environmental/natural resource economics. As was hypothesized, results suggest that degree names that do not mention the term "agricultural," such as "Environmental and Resource Economics and Management" have broader appeal compared with degrees that include the term "agricultural." Somewhat surprisingly, names with or without agriculture have about the same appeal to students with agricultural science interests. We conclude that Departments of Agricultural Economics can expand their base of potential students by offering degrees with names that do not include the word "agricultural" in addition to their traditional degrees, and, probably, without jeopardizing these degrees.

## Introduction

Academic degree names are more important than

ever for marketing degree programs both within and outside of the academic arena. A popular degree name will make it easier to recruit students, as well as improve their job prospects. Thus, many agricultural and applied economics departments have changed their names by adding resource economics, agribusiness, or applied to their department titles (Blank, 1998). Although the name "Agricultural Economics" is still the title most widely used by departments listed in the American Agricultural Economics Association (AAEA) directory, "Agricultural and Resource Economics" (the most popular name in the western states) and names containing the word "Agribusiness" are close runners up (AAEA, 2001).

As the number of students with farm backgrounds continues to decline and fewer students "go back to the farm," agricultural and applied economics programs must be able to attract students with different backgrounds to serve industry and students' needs. A concern with all of the above mentioned department names is that the terms "agricultural" or "agribusiness" may put-off many students with non-farm backgrounds who might otherwise be interested in curricula that come under the traditional agricultural economics umbrella -- such as food distribution and safety or natural and environmental resources (Blank, 1998). We speculate that most agricultural and applied economics programs must for political reasons keep either "agricultural" or the related word "agribusiness" in their department names. A solution may be to keep the word "agricultural" in the department name and offer curricula with degree names that do not include any form of the word "agriculture." Degree names go on resumes, and in common use they become the answer to the question

asked by friends, relatives and potential employers, "What is your major?" We argue that agricultural and applied economics departments can more successfully compete for non-traditional, urban students if they emphasize degree names that undergraduate students can identify with and we specifically hypothesized that students from non-traditional backgrounds would prefer names that exclude terms related to agriculture

While our conjectures may seem common sense, we could find no definitive empirical studies in the literature. As we have debated curriculum and planning issues in our department, we have heard arguments from some of our colleagues that names make little difference, while others opine that they can be an important factor. We speculate that these debates go on in other departments and that a careful empirical study could therefore prove useful.

The Department of Agricultural Economics at Washington State University (WSU) conducted a survey of all undeclared undergraduate students at WSU in order to find out their potential interest in a proposed environmental and resource economics degree and their perceptions and preferences for degree names. The Department currently has the classes and curricula to support interests in environmental and natural resource economics but attracts few students to these options. In this survey, the students were asked a variety of questions related to their subject interests, background, and demographic information. They were also confronted with different potential degree names for a curriculum in natural and environmental resource economics. The hypotheses that were tested in this analysis include that those undergraduate students who came from the Seattle metropolitan area would feel less positive about the degree title "Agricultural Economics (with an option in Environmental and Resource Economics)" than other potential degree names that emphasize the environmental aspects of the program. In addition, we conjectured that a number of students from non-traditional interest areas would feel less positive about a degree called "Agricultural Economics" than other degree titles. We specifically tested this hypotheses for students with business interests and students with environmental interests. We also conjectured that students with agricultural science interests would prefer an agricultural name.

Determining which factors attract students to higher education in agricultural fields is an important area of study. Cole and Thompson (1999) surveyed students at Oregon State University's College of Agriculture in order to analyze the factors that affected their decisions. They concluded that early recruitment is critical. Many researchers have studied the recent changes that were intended to attract students to agricultural economics programs.

Blank (1998) found that, in response to declining enrollments and budgets, many departments have changed their name and/or curriculum to attract domestic students who are not interested in production agriculture. Zepeda and Marchant (1998) analyzed trends in agricultural and applied economics programs based on AAEA surveys. Weldon et al. (1999) examined the composition of agricultural economics students and projected what they will be like in the future.

A larger number of researchers have studied enrollments and factors that affect enrollments in Departments of Economics. One of the identified factors is the number of discouraged business majors. Salemi and Eubanks (1996) and Brasfield et al. (1996) analyzed this effect. Agricultural and Applied Economics Departments also compete for students with interests in business, so the way that these students perceive degrees offered by departments of agricultural and applied economics is important. For example, the Graduate School of Management at the University of California at Davis (UCD) does not offer a baccalaureate degree. The Department of Agricultural and Resource Economics at UCD changed the name of their undergraduate degree from "Agricultural and Resource Economics" to "Managerial Economics." After this change, enrollment approximately doubled, and Managerial Economics became the most popular degree on campus. Even so, it is important for degrees offered by agricultural and applied economics departments to not be perceived as "second-class" business degrees, especially at universities that offer undergraduate degrees in business. Broder and Bergstrom (1996) suggested the way to avoid the perceived second-class status is to match the quantitative rigor of business programs but market the degrees as differentiated products based on the department's particular strengths.

## Materials and Methods

The data for this analysis were collected from an internet-based survey. A request to participate in this Internet survey was e-mailed to all WSU undergraduate students with an undecided major status. There were about 4090 names in the sample frame although many e-mail addresses were bad. There were 970 responses. In this survey, students were asked a variety of questions about their general areas of interest for their college studies and future careers. Those expressed areas of interest were not restricted to agricultural economics fields. They also included areas of art, math and science, business, communications, literature, psychology, pre-law and pre-medicine. In addition, respondents were presented with different potential titles for their BS program, including Environmental and Resource Economics

and Management (“EREM”), and Agricultural Economics (with an option in Environmental and Resource Economics) (“AGECON”). Students were informed that option titles do not appear on the degree. Students were asked, regardless of their personal interest in the major, how they felt about the specific degree names. They could respond with "strongly positive," "positive," "neutral," and "negative," or "strongly negative." For quantification purposes, only “strongly positive” and “positive” answers were coded as 1, and the rest of the responses as 0.

The undergraduates were also asked about their high school preparation in different fields, including math, and particularly calculus. In addition, they were asked about their background (farm, rural or non-rural, small town, medium city, and city/metro), as well as the geographical area of their hometowns. In order to recover additional demographic information, such as gender and age, students were asked to enter their student identification number. Summary statistics describing the data are presented in Table 1.

We use a two-equation bivariate probit model in order to analyze simultaneous subjective students' perceptions of degree names. This model was first used to empirically estimate decisions involving labor participation. Recent applications related to preferences and contingent valuation literature include Huang (1996), and Cooper and Keim (1996).

We limited our analysis to two potential degree names: “Environmental and Resource Economics and Management” (EREM) and “Agricultural Economics with an option in Environmental and Resource Economics” (AGECON), which were presented to undergraduate students in the survey. Following the classical rationality assumption, we assumed that the students indicated how they felt in

a way that maximized their utility. Note that we did not observe the utility derived from each choice, we instead observed an indication of how positively the student felt about each degree titles. We modeled this selection process with the following two probit equations:

$$(1) \quad y_1 = \beta'_1 x_1 + \varepsilon_1, \text{ where } y_1 = \begin{cases} 1 & \text{if student feels positive about "EREM"} \\ 0 & \text{otherwise} \end{cases}$$

$$(2) \quad y_2 = \beta'_2 x_2 + \varepsilon_2, \text{ where } y_2 = \begin{cases} 1 & \text{if student feels positive about "AGECON"} \\ 0 & \text{otherwise} \end{cases}$$

Notice that we could obtain four different pairs of responses: students who felt positive about both names (yes-yes), students who did not feel positive about either name (no-no), students who only felt positive about the “EREM” degree's name (yes-no), and students who only felt positive about the “AGECON” degree's name (no-yes).

As noted by Poe et al. (1997), the assumption of independent errors may not be appropriate if multiple contingent valuation questions (as in this case) were posted in the same questionnaire. Therefore, we assumed that  $\varepsilon_1$  and  $\varepsilon_2$  were correlated with a coefficient  $\rho$ . Within a discrete choice format and in an analogous way to seemingly unrelated regressions, this non-independence between errors term could be modeled as bivariate normal distribution  $BVN(\beta'_1 x_1, \beta'_2 x_2, \sigma_1^2, \sigma_2^2, \rho)$ . Estimation of the associated log-likelihood function was accomplished using a full maximum likelihood information framework.

**Empirical Specification and Hypothesis Tests**

Empirical representation of the system of equations presented in (1) and (2) were as follows:

$$(3) \quad Y_i = \beta_{1i} * Bus + \beta_{2i} * EnvS + \beta_{3i} * Ag + \beta_{4i} * Soc + \beta_{5i} * MathSci + \beta_{6i} * Seattle + \beta_{7i} * FarmMale + \varepsilon_i, \text{ where } i = 1, 2.$$

This final empirical model was determined by testing different specifications. The model with the highest significance and number of correct predictions was chosen. The final model included a set of explanatory variables that represent subjective student's interest in different fields such as business, environmental science, agriculture, other social sciences, math and science, and demographic characteristics. The demographics included are related to the students' backgrounds, such as whether they are from the Seattle metropolitan area and the cross product of being a male and having a farm background.

It was hypothesized that students' interests affect their feelings about degree titles. Particularly, students with an interest in business were expected to feel more positive about a degree name that includes the suffix “management” and does not include the term “agricultural.” In addition, we expected students that were interested in Environmental Studies to prefer “Environmental Economics” and students interested in Agricultural

**Table 1. Summary Statistics of Relevant Variables**

Variable	Definition	Mean	Std.Dev.	Range	Respondents
Bus	Business Interest	0.261	0.440	(0,1)	850
EnvirS	Environmental Science Interest	0.060	0.238	(0,1)	782
AgSc	Agricultural Science Interest	0.059	0.237	(0,1)	757
Soc	Political and Social Sciences Interests	0.207	0.405	(0,1)	823
MathSci	Math and Science Interests	0.264	0.441	(0,1)	808
Seattle	Hometown is in Seattle Metropolitan area	0.227	0.419	(0,1)	949
Farm Male	Male with farm background	0.064	0.245	(0,1)	970
EREM	Positive perception of the degree name Environmental and Resource Economics and Management	0.624	0.485	(0,1)	916
AgEcon	Positive perception of the degree name Agricultural Economics with option	0.466	0.499	(0,1)	910

Science to prefer the name “Agricultural Economics.” Finally, we expected students from the Seattle metropolitan area to feel negatively about a degree name that includes the term “agricultural.” In order to evaluate our conjectures, we the following hypotheses were tested:

- (4)  $H_0 = \beta_{1,EREM} Bus - \beta_{1,AGECON} Bus = 0$
- (5)  $H_0 = \beta_{2,EREM} EnvS - \beta_{2,AGECON} EnvS = 0$
- (6)  $H_0 = \beta_{3,EREM} AgSc - \beta_{3,AGECON} AgSc = 0.$
- (7)  $H_0 = \beta_{1,EREM} Seattle - \beta_{6,AGECON} Seattle = 0.$

A rejection of hypothesis (4)-(6) would support our conjecture that having different interests affects the way students perceive different titles. A rejection of hypothesis (7) would support our conjecture that students with urban backgrounds feel differently about degree names that include the term “agricultural.” In order to test hypotheses (4)-(7), we conducted four independent pairwise t-tests.

**Results and Discussion**

Maximum likelihood estimates of the bivariate model are presented in Table 2 and summarized schematically in Table 3. The estimate of  $\rho$  that maximized the log-likelihood function is 0.398. It was statistically different from zero at the 0.001 significance level, based on a t-test. This suggests that the residuals from the two probit equations were positively correlated, and inconsistent parameters may be obtained if equations (1) and (2) were estimated separately. Overall, the model was able to predict correctly 71% of the total observations.

The role that degree names played is obvious from the results. Eight of the ten coefficients related to variables denoting interest in different study fields were significant at the critical level of 0.1 or lower. Looking at Table 2 and the schematic results in Table 3, results from the preference equations suggest that respondents who were interested in business were more likely to feel positively about the “EREM” name than the “AGECON” degree name. In addition, students who were interested in Environmental Science were more likely to choose the name “EREM” versus the name “AGECON”. As expected, an interest in environmental science carried the opposite sign in the two preference equations, being positive for the “EREM” name, and negative for the “AGECON” name. With respect to the students interested in Agricultural Sciences, results showed that their interest carries a positive effect for choosing both names -an Agricultural Science interest was a common factor in feeling positive about either degree title. It was also interesting that students' interests in other fields of studies such as other Social Sciences as well as Math and Sciences had a positive

**Table 2. Bivariate Probit Estimation Results**

Variable	Coefficient	t-ratio	P-value
“Environmental and Resource Economics & Management” choice			
Bus	0.215	2.004	0.045
EnvS	1.180	3.599	0.0003
AgSc	0.597	2.016	0.044
Seattle	0.057	0.504	0.615
Soc	0.352	2.924	0.004
MathSci	0.223	2.055	0.040
Farm Male	0.403	1.812	0.070
“Agricultural Economics” with Option Choice			
Bus	-0.181	-1.704	0.088
EnvS	-0.141	-0.657	0.511
AgSc	0.473	1.861	0.063
Seattle	-0.135	-1.234	0.217
Soc	0.115	1.012	0.311
MathSci	-0.192	-1.815	0.069
Farm Male	0.479	2.259	0.024
Rho(1,2)	0.398	7.063	0.000
N=686			

**Table 3. Schematic Results for Single Choice and Pairwise test**

Variable	EREM* choice	AGECON** choice	Pair-wise test
Bus	++	-	+++
EnvS	+++	N(-)	+++
AgSc	++	+	N
Seattle	N(+)	N(-)	N (p=15%)
Soc	+++	N(+)	
MathSci	++	-	
Farm Male	+	++	

Where one mark represents 10% p-level; two represents 5% p-level; and three represents 1% p-level of statistical significance.  
 \*EREM stands for Environmental and Resource Economics and Management.  
 \*\*AGECON stands for Agricultural Economics with an option.

and statistically significant effect on choosing the name “EREM.” Students who were interested in other Social Sciences had a positive likelihood (although not at traditional levels of significance with a probability value of 0.10 or less) of choosing the “AGECON” title, while the students interested in Math and Science had a negative likelihood of choosing the “AGECON” degree name. Socio-demographic characteristics did not play a statistically significant differential role on choosing either

degree name, although the signs were opposite.

Table 4 presents results of the pairwise tests of hypotheses. Results are also shown schematically in table 3. We rejected the hypotheses represented by Equations (4) and (5). Students who were interested in business or environmental science were more likely to feel positive about the name of the EREM degree. We did not reject the hypothesis represented by Equation (6) that students with interest in agricultural science felt the same about the name of the EREM degree as they felt about the name AGECON. Finally, although the signs on the coefficients differed, we failed to reject the hypothesis given by Equation (7) that students from the Seattle metropolitan area felt the same about the name of the EREM degree as they felt about the name AGECON. The difference between the coefficients was on the cusp of the standard level of used to measure statistical significance.

### Conclusions

The Department of Agricultural Economics at Washington State University conducted a survey of

**Table 4. Pairwise Tests**

Hypothesis	T-test	P-values
$H_0 = \beta_{1,EREM} BUS - \beta_{1,AgEcon} BUS = 0$	2.9671	0.0001
$H_0 = \beta_{2,EREM} ENV S - \beta_{2,AgEcon} ENV S = 0$	2.1399	0.0001
$H_0 = \beta_{3,EREM} AgSc - \beta_{3,AgEcon} AgSc = 0$	0.2123	0.800
$H_0 = \beta_{6,EREM} Seattle - \beta_{6,AGECON} Seattle = 0$	1.3655	0.150

EREM stands for Environmental and Resource Economics and Management.

AGECON stands for Agricultural Economics with an option.

all undeclared WSU undergraduate students in order to find out their potential interest in a proposed environmental and resource economics curriculum and their perceptions and preferences for degree names for that curriculum. Based on the results from this survey, we found that the “Environmental and Resource Economics and Management” degree title was more appealing than “Agricultural Economics” for a larger/wider variety of students interested in different study fields. We concluded that a degree called “Environmental and Resource Economics and Management” could attract students with business, other social sciences and math and science interests, without decreasing the interest of traditional students in Agricultural Sciences or male students who came from farms. In other words, Departments of Agricultural and Applied Economics may be able to tap into new markets of students by offering degrees with names that do not include the word “agricultural” in addition to their traditionally named

degrees and, probably, without jeopardizing these degrees

### Literature Cited

Adelaja, A.O. 1997. New Challenges Facing Agricultural and Resource Economics Departments in the Twenty-First Century. *Agricultural and Resource Economics Rev.* 26(2): 117-29.

Agricultural Economics Association (AAEA) 2001. membership directory, Ames, Iowa.

Blank, S.C. 1998. A Decade of Decline and Evolution in Agricultural Economics Enrollments and Program. 1985-96. *Rev. of Agricultural Economics* 20(1): 155-67.

Brasfield, D., D. Harrison, J. McCoy, and M. Milkman. 1996. Why Have Some Schools Not Experienced a Decrease in the Percentage of Students Majoring in Economics? *Jour. of Economic Education* 27(4): 362-70

Broder, J. and J. Bergstrom. 1996. Product Differentiation in Undergraduate Programs: A Case Study at the University of Georgia. *CHOICES*: 37-38.

Cole, L. and G.W. Thompson. 1999. Survey of Current Students: Implications for Recruitment and Retention.” *NACTA Jour.* 43(3):15-20.

Cooper, J.C, and R.W. Keim. 1996. Incentive Payments to Encourage Farmer Adoption of Water Quality. *American Jour. of Agricultural Economics*, 78:54-64.

Huang, L.C. 1996. Consumer Preferences and Attitudes Towards Organically Grown Product. *European Rev. of Agricultural Economics*, 23:331-342.

Poe, G.L., M.P. Welsh, and P.A. Champ. 1997. Measuring the Difference in Mean Willingness to Pay when Dichotomous Contingent Valuation Responses Are not Independent. *Land Economics*, 73(2):255-67.

Salemi, M.K. and C. Eubanks. 1996. Accounting for the Rise and Fall in the Number of Economics Majors with the Discouraged-Business-Major Hypothesis. *Jour. of Economic Education* 27(4): 350-61.

Weldon, R.N., B. Covington, B.F. Long, and L.J. Connor. 1999. Who Will Our Students Be? A Futuristic View. *Rev. of Agricultural Economics* 21(2): 527-41.

Zepeda, L. and M. Marchant. 1998. Bigger, Smaller, Richer, Poorer: Trends in Agricultural Economics. *Rev. of Agricultural Economics* 20(2): 406-21