A Decade of Change in Agricultural Economics Programs, 1975–84

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University agricultural economics programs were surveyed to assess the changes of the past decade. Undergraduate enrollments increased significantly while graduate enrollments were unchanged on average. Overall, agricultural economics departments became much larger relative to the average size of colleges of agriculture. Despite some changes in expectations concerning future growth areas, most programs appear to have been successful in meeting students' demands.

In the past decade there have been considerable changes in the environment in which university agricultural economics programs operate [Polopolus]. The prospects for the future, summarized by Neil Harl in his presidential address, are that "Agricultural economics may be moving into the most important, and possibly the most turbulent, period in the history of the profession" (p. 845). Harl stressed that:

> "A major area of concern is whether graduate and undergraduate programs in agricultural economics are adjusting rapidly enough . . . and with sufficient breadth to enable the necessary extension and resident teaching activities to be carried out."

He urged institutions

> ". . . to undertake a review of both graduate and undergraduate programs in light of the new generation of problems likely to be facing agricultural economists and in light of the nature of the output likely to be demanded" (p. 847).

As part of such a review, this project was designed to highlight impacts that environmental change has had on programs over the past decade. It is expected that much has changed since the 1975 study of undergraduate programs by Beck *et al.* and the 1970 analysis of graduate programs by Storey and Christensen. By observing the data for the years which have passed since Beck *et al.* conducted their survey, it is possible to see whether current conditions and/or expectations differ from those of a decade ago.

Objectives and Methodology

The general objective of this study is to measure what impacts major changes in the academic environment have had on agricultural economics programs. Specific hypotheses concerning three areas of expected change, described below, are tested.

Enrollment

Expectations to be evaluated include:

1. Undergraduate enrollments may increase (with population growth), but not evenly across geographical regions.
2. Total graduate enrollments may parallel undergraduate enrollment trends, although more regional differences may occur due to students shifting.
3. Beck *et al.* expected the ratio of agricultural economics majors to total agricultural college enrollments to remain stable as both enrollments grew.

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Composition of Student Body

Demographic changes expected include:

1. Declining farm population in the U.S. suggests that an increasing percentage of agricultural economics majors will have a nonfarm background.
2. With more women entering the workforce, it is expected that women will represent an increasing percentage of majors in agricultural economics departments.

Department Programs

Agricultural economics departments may shift faculty responsibilities and/or curriculum, as described below.

1. More faculty will have to perform a student advising role to maintain student–advisor ratios in periods of increasing enrollments.
2. Curriculum options offered by agricultural economics departments will continue to change in the future in response to student demand.

While evaluating the expected environmental changes listed above, one other general hypothesis was considered: that undergraduate and graduate programs would be affected by different types and/or levels of change. This hypothesis was based on the expectation that different "markets" were served by the programs.

Data for this study were obtained through a mail survey. Questionnaires were mailed in 1984 to the 86 academic departments listed by James.[1] Data received from 51 departments are presented in this paper. No obvious nonresponse bias could be detected; respondents appeared randomly distributed in terms of size and geographical location. Hypothesis tests were performed using analysis of variance (ANOVA) techniques or simple comparisons, whichever was appropriate.

Enrollment Trends Results

During the period covering academic years 1975–76 to 1983–84, undergraduate enrollment in agricultural economics programs increased significantly while graduate enrollment was unchanged. For all regions,[2] average departmental undergraduate enrollment increased 61 percent (Table 1). The Central region continues to have the largest departmental enrollments. It is noted that the U.S. region with the lowest rate of increase from 1975–84, the South, had been the fastest growing region in the period studied by Beck *et al.* (1970–75).

The trend in average departmental graduate enrollment for all regions was one of little change from year-to-year, resulting in no change over the study period (Table 1). Oddly, the Northeast region had the highest growth rate for undergraduate programs and the greatest rate of decline for graduate programs. Conversely, the South had the smallest rate of increase in

[1] The sample for this study differs from that of most other studies cited because Nonland Grant institutions were included to give a more complete picture of the academic segment of the profession. The self-reported status of responding institutions was: Land Grant—87 percent, Nonland Grant—13 percent. The highest degree granted by the department: Ph.D.—48 percent, M.S.—41 percent, B.S.—11 percent.

[2] To make the regions of more equal size the states falling into the usual "western" region were divided into two regions—"West" and "Central." States included in each region were:

West—California, Oregon, Washington, Idaho, Utah, Nevada, Arizona, Hawaii, Alaska.
Central—New Mexico, Texas, Oklahoma, Colorado, Wyoming, Nebraska, Montana, South Dakota, North Dakota, Kansas.
North Central—Missouri, Iowa, Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio.
South—Louisiana, Arkansas, Mississippi, Alabama, Tennessee, Kentucky, Florida, Georgia, South Carolina, North Carolina, Virginia, West Virginia.
Northeast—Delaware, Maryland, Pennsylvania, New York, New Jersey, Rhode Island, Connecticut, Massachusetts, Vermont, New Hampshire, Maine.

TABLE 1. Average Enrollment in Agricultural Economics Departments by Region.

Years	Northeast	South	North Central	Central	West	Canada	All Regions
			Undergraduate				
1975–76	68	70	158	198	183	26	136
1976–77	77	78	178	230	212	26	155
1977–78	81	76	202	257	233	25	170
1978–79	84	80	224	283	231	26	180
1979–80	97	82	251	311	235	21	193
1980–81	95	84	277	343	253	32	209
1981–82	112	83	281	349	268	36	217
1982–83	118	84	288	373	259	28	221
1983–84	128	89	258	364	269	31	219
Percentage Change (1975 to 1984)	+86	+27	+63	+84	+47	+19	+61
			Graduate				
1975–76	60	13	65	38	39	19	39
1976–77	52	15	68	32	41	19	38
1977–78	53	16	69	35	41	16	39
1978–79	50	17	73	35	40	16	39
1979–80	47	17	77	37	39	16	40
1980–81	45	20	75	37	40	22	41
1981–82	43	22	67	38	44	25	41
1982–83	38	23	57	41	43	28	39
1983–84	41	25	57	36	42	31	39
Percentage Change (1975 to 1984)	−32	+92	−12	−5	+8	+63	0

undergraduate enrollments (within the U.S.) and the highest growth rate for graduate enrollments.

The conflicting trends in undergraduate and graduate enrollments raise some perplexing questions. For example, with increasing numbers of undergraduates in agricultural economics programs to draw upon, why have graduate programs not been able to maintain or increase enrollments? Numerous plausible explanations exist. For example, both Polopolus and Harl noted that masters and Ph.D. agricultural economics programs have left graduates with major unmet needs, especially in agribusiness management. Polopolus suggests that agricultural economics programs may have difficulty in recruiting if potential graduate students recognize that agribusiness firms may "... increasingly shun traditional agricultural economics masters and Ph.D. degree holders in favor of business school products" (p. 809). However, another possible explanation for the declining graduate enrollments was provided by one survey respondent. It was noted that the significant reduction in graduate enrollment for that department was a direct result of their policy decision to maintain a desired student/faculty ratio in the face of declining budget allocations. A large undergraduate program also indicated that they were limiting enrollment growth for the same reason.

To give some perspective to the enrollment figures for agricultural economics programs, they can be compared to the enrollments of the colleges of agricultural of the same institutions. Combining the average undergraduate and graduate enrollments for all regions gives a net increase of 47 percent for agricultural economics programs from 1975–76 to 1983–

84. Over that same period, average college of agriculture enrollments **decreased** 11 percent, with each region showing some decline. These results, for 1975–84, differ markedly from those reported by Beck *et al.* for the 1971–75 period. Agricultural economics enrollments have continued to grow at a steady rate over the past decade while the rapid agricultural college growth observed in the early 1970s has been reversed. While agricultural economics departments represented ten percent of average agricultural college enrollments in 1975–76, they represented 18 percent in 1983–84.

These changes in enrollment figures imply pressures to reallocate resources. Possible changes include shifting faculty positions to agricultural economics from other agriculture college departments, or shifting more of available agricultural economics department resources toward undergraduate teaching and away from research or extension activities.

Composition Changes

As enrollment in agricultural economics departments has grown, composition of that student body has changed. Beck *et al.* argued that an increasing proportion of majors with nonfarm backgrounds was to be expected because of the decreasing farm population. A comparison of the results of the 1975 and 1984 surveys indicates that such a change has taken place. In 1975, 54 percent of the departments indicated that more than half of their students came from farms; in 1984, only 37 percent responded that over half their students had a farm background. The 1984 results were:

Students w/farm background	Institutions responding (%)
0–10%	22
11–25%	20
26–50%	20
51–75%	28
76–90%	7
91–100%	2
	100%

In the Northeast, all departments reported that less than 50 percent of students had farm backgrounds, which was also true in 1975, and 60 percent of the departments indicated that ten percent or less of their students came from farms. In the North Central region there has been an apparent drop in the level of farm experience from the high level reported by Beck *et al.* In 1984, 67 percent of North Central departments reported that 25 percent or less of their students had farm backgrounds.[3]

A second aspect of agricultural economics department composition which is expected to change is the ratio of men to women. Several studies have found that more women are entering graduate programs and pursuing careers in agricultural economics [Lane; Lee; Strauss and Tarr]. In 1984, the survey results support the earlier findings, but indicate that women are still a minority in all departments. The proportion of women to total majors in agricultural economics departments was:

Proportion (%)	Undergraduate (%)	Graduate (%)
0–10	13	28
11–25	48	40
26–50	39	32
	100%	100%

Some significant regional differences occurred. For undergraduate programs, 70 percent and 44 percent of departments in the Northeast and West, respectively, reported that women represented 26–50 percent of total enrollment. For graduate programs, 56 percent of departments in the West have 26–50 percent women majors. In all other regions, women represented a smaller proportion of majors. (The ANOVAs were significant at the five percent level.)

Student Advising

The quality of student advising continues to be an area of concern, as evidenced

[3] The regional results are presented to indicate general trends, but are based on small sample sizes which make hypothesis testing hazardous.

TABLE 2. Areas of Anticipated Enrollment Growth In Agricultural Economics Over the Next Decade.

Program Options	Percentage of Responding Institutions Specifying Each Category[a]				
	Greatest Growth	Second	Third	No Growth	Decline
	Undergraduate				
Farm Mgmt/Prod Econ	4	15	11	26	2
Ag Marketing	9	24	15	9	0
Agribusiness	54	20	2	2	0
Ag Econ (Price, Income Analysis)	2	7	9	15	0
Intnl Trade/Dev	7	2	20	9	0
Ag Finance	2	20	17	11	0
Nat Resource Econ	9	9	0	26	2
Rur Dev/Soc	2	0	11	9	7
Human Res Econ	0	0	4	15	2
Consumer Econ	0	0	4	9	4
Gen Econ	2	0	0	15	0
Quant Methods	0	7	7	11	0
Bus Admin	7	2	0	9	0
Other	0	0	2	0	0
	Graduate				
Farm Mgmt/Prod Econ	19	10	5	19	0
Ag Marketing	10	15	15	10	0
Agribusiness	19	5	24	10	0
Ag Econ (Price, Income Analysis)	19	24	10	5	0
Intnl Trade/Dev	10	19	29	10	0
Ag Finance	10	14	10	10	0
Nat Resource Econ	14	14	0	10	0
Rur Dev/Soc	0	5	5	10	10
Human Res Econ	0	0	0	0	10
Consumer Econ	0	0	5	5	5
Gen Econ	0	0	0	10	0
Quant Methods	10	0	14	5	0
Bus Admin	0	0	0	5	0

[a] Columns may not total 100 percent due to multiple answers, or no answers, given by respondents and rounding.

by studies such as those by Davis *et al.* and Broder and Wetzstein. Beck *et al.* suggest that the quality of advising may be inversely related to the student–faculty ratio, but Broder and Wetzstein illustrate that other factors can sometimes compensate for higher student–faculty ratios.

From the survey it appears that departmental approaches to advising did not change much between 1975 and 1984, but average advising loads did increase slightly. Twenty-four percent of the respondents indicated that all faculty members were involved in advising, compared to the 30 percent response in 1975. On the other hand, Beck *et al.* reported that one-third of all departments indicated that all student advising was performed by only a few (one to five) advisors, whereas 22 percent of 1984 respondents said that less than one-half of the faculty were involved in advising. Taken together these two points appear to indicate that advising responsibilities are being somewhat more widely distributed among department members. Concerning student–faculty ratios, in response to the question, "What is the average number of students per faculty ad-

visor?", replies ranged[4] from four to over 200 with a median of 19. In 1975, 63 percent of departments had advising loads averaging 19 or fewer students per advisor [Beck *et al.*, p. 767].

Program Options and Growth Areas

A wide variety of program options was found in responding agricultural economics departments, especially at the undergraduate level.[5] While most graduate programs consisted mainly of traditional options (such as agricultural economics, economics, and farm management), undergraduate programs often had special options available in addition to the more traditional subjects.

It is possible that student demand, as reflected in enrollments by option, is affected significantly by supply variables, such as options available at the school a student wishes to attend. Had all 13 options been offered at each university, some changes in distribution would be expected. For example, a large department in the West indicated that it is adding two options (marketing and finance) which will greatly reduce the enrollments in the two options (farm management and agribusiness) it offers currently.

To outline how agricultural economics departments perceive future student demands for their services, respondents were asked to identify areas of growth and/or decline expected during the next five to ten years. The responses received for undergraduate and graduate programs are in Table 2.

Comparing the undergraduate results in Table 2 with those of Beck *et al.* shows that expectations have changed over the past decade. Although agribusiness is still overwhelmingly the area of greatest anticipated growth, other options have lost demand. By listing more options and allowing "no growth" and "decline" responses the 1984 survey provides insight into "soft spots" in undergraduate enrollment. Specifically, the three other options listed by Beck *et al.* (farm management/production economics, natural resource economics, and rural development), each received about as many or more responses of "no growth" or "decline" as responses of expected growth. This implies that the growth expected in 1973 may have been realized by 1984 and that there has been a shift away from those options.

Some regional differences were uncovered regarding expectations of undergraduate enrollment growth. For agribusiness responses in Table 2, all regions in the U.S. indicated that the option was first or second in their growth expectations; however, no Canadian departments expect any growth in the option. For the farm management option, 50 percent of Northeastern departments expect no growth, while 60 percent of Southern departments list the option as first or second in expected growth. The South is also the only region to expect significant growth in the marketing option: 50 percent of Southern departments listed it as their first or second area of anticipated growth. Finally, in the Northeast 50 percent of departments listed natural resource economics as their first or second area of expected growth while 40 percent of departments expect no growth in the option.

Turning to graduate enrollments, it is clear that expected demand for graduate options is much less concentrated than that for undergraduate options. Although agribusiness is still an area of significant anticipated growth, the traditional agricultural economics option received the most "first" or "second" responses. Also, the farm management/production econom-

[4] The highest advising loads are in departments with only a few advisors. For example, one department with over 200 majors has one undergraduate advisor.

[5] The options listed in Table 2 are the 12 used by James with the addition of business administration.

ics, international trade/development, and quantitative methods options each received more responses of expected growth than they did for undergraduate programs. It is possible that the differences between anticipated demands for undergraduate and graduate options reflect the differences in the nature of employment of holders of undergraduate versus graduate degrees.

Summary and Conclusions

The survey shows that, overall, enrollments in agricultural economics departments have increased significantly since the mid-1970s despite a decrease in enrollments in colleges of agriculture. These enrollment increases and the changing backgrounds of agricultural economics students present difficult challenges to departments which have faced tighter budgets over the past decade. Also, the results indicate that the anticipated demands of students vary somewhat by region. This implies that the standard curriculum may need to allow for the addition of special options of importance to specific groups of students.

Faculties must continue to monitor developments in the job market so as to identify student demands and responsive curriculum. Apparently, most programs have been performing those functions well, as evidenced by the increased proportion of college enrollments accounted for by agricultural economics departments. Also, it appears that the challenge of maintaining enrollments in the face of growing business administration programs is being met at the undergraduate level. Graduate agricultural economics programs have not done as well in maintaining enrollments. More undergraduates are in the agribusiness option than any other, and many departments expect to expand that option in the future. It appears that undergraduate and graduate programs are responding to somewhat different "market forces," necessitating different responses. In sum, the continuing challenge to all agricultural economics departments will be to allocate their increasingly limited resources so as to meet the changing demands of students with a high quality program.

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