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MICHEAL WATTS, Section Editor

Master's Degree in Economics: Missions and Methods

James P. McCoy and Martin I. Milkman

The recently reported results of the Commission on Graduate Education in Economics (COGEE) have focused considerable attention on doctoral programs in economics (Kruger et al. 1991; Hansen 1991). Specific questions that were asked and addressed by the commission included: Who are the doctoral students in economics? What do they do after they receive their doctorates? How well do doctoral programs equip them for their careers? The report of the commission thoroughly addresses these questions for doctoral programs, but does not attempt to answer similar questions for students in terminal master's degree programs in economics.

Two previous studies have attempted to at least partially answer some questions with respect to master in economics programs. Barr, Aby, and Willhite (1991) recently reported the results of their survey of graduate economics departments offering master's and Ph.D.'s, focusing upon differences in program structures and graduate placement because of department location (business or liberal arts) and geographic location of the school. Thornton and Innes (1988) summarize results of a 1985 survey of master in economics programs focusing upon questions such as admissions requirements, curriculum requirements, time required to earn a degree, comprehensive examination and thesis requirements, and graduate placement directly into careers versus placement in doctoral programs. However, neither of these studies attempted to ascertain significant differences in programs that may be associated with different institutional characteristics or different program goals. In addition, both previous studies excluded agricultural economics programs from their analysis.

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In the current study, we addressed three broad goals. First, we tried to update answers to many of the same questions asked in 1985 by Thornton and Innes of master in economics programs. These questions (typically asked in more detail in our study) concerned admission requirements, course requirements, normal time for degree completion, comprehensive exam and thesis requirements, and “next steps” taken by degree recipients in master’s degree programs. Second, we explored additional characteristics of these programs not previously studied. These characteristics included availability of financial assistance, characteristics of faculty, characteristics and background of students, and, possibly most important, the desired outcome or goal of the program. Finally, we explored the possibility of different program characteristics based upon different institutional department characteristics as well as different program goals, such as whether or not departments offering the master’s degree also offer the Ph.D., and whether or not they are quantitatively oriented in their admissions requirements. To ascertain the program goal(s), we heeded the advice of Siegfried et al. (1991, 199) and asked the directors of programs what they believed to be the most desired outcome of their programs. We conclude the analysis with a close look at similarities and differences between M.A./M.S. in economics programs and master in agricultural economics programs.

THE DATA

The data used in this study came from surveys completed by directors of master in economics programs in spring 1992. In our cover letter, we specifically requested that information be provided with respect to their terminal master’s degree program. The survey consisted of two parts: a general form requesting information on institutional and departmental characteristics and a program-specific form requesting information relevant to a specific program. This two-part survey was used because many departments offer more than one type of master in economics program with potentially different characteristics.

General forms were mailed to the 334 schools listed in the 1991 edition of *Peterson’s Guide to Graduate Study* as offering master’s degree programs in economics, including 63 schools that offered agricultural economics programs. Four hundred fifty-nine program-specific forms were sent out, including 90 forms mailed for agricultural economics–related programs. We received a usable response of 123 general forms (a response rate of 37 percent), including 30 from agricultural economics programs (a response rate of 48 percent). We received a total of 153 completed program-specific forms (a response rate of 33 percent), including 35 from agricultural economics programs (a response rate of 39 percent). Only one mailing was executed because we were satisfied with the response rates.

Variable names, variable descriptions, and the means and standard deviations of responses for each variable over all respondents are reported in Table 1. Nearly 45 percent of the departments in our sample offered the Ph.D., and 32 percent had quantitatively oriented admissions course requirements (two calculus courses or at least one calculus course and statistics). Directors of 18.5 percent of the

TABLE 1
Data Description

Variable	Description	<i>M^a</i>	<i>SD</i>
PHD	Ph.D. offered in your department?	.446	.499
QUANT	Mathematical admission requirements?	.324	.470
DOCWORK	Prep for doctoral work is primary mission?	.185	.390
BUSGOVT	Prep for careers (bus. and gov.) is primary mission?	.583	.495
BOTH ^b	Prep for doctoral work and careers are primary missions	.172	.379
Departmental faculty			
FULFAC	Number of full-time faculty	21.2	10.3
WOMFAC	Percentage of women faculty	10.9	8.3
MINFAC	Percentage of minority faculty	8.7	10.8
Admission requirements			
ENTREXAM	Standardized entrance exam required?	.681	.468
MINIMUM	Required minimum score on entrance exam (if exam required)?	.531	.501
MINUGPA	Required minimum undergraduate GPA?	.796	.405
REQGPA	If required, what is the minimum GPA?	2.900	.235
RCRSWRK	Specific coursework required?	.852	.357
	If yes, is		
INTERECO	intermediate economics required?	.795	.405
ONECALC	at least one calculus course required?	.480	.502
TWOCALC	two calculus courses required?	.246	.432
STATS	statistics required?	.669	.472
MINTOEFL	If required, minimum TOEFL score	553.130	20.250
Student characteristics			
FTENROLL	Number of full-time students enrolled in program	19.0	16.2
	Percentage of students who		
WOMEN	are women	28.6	15.2
AFRIAMER	are African American	4.5	10.5
FOREIGN	are foreign	38.7	22.9
UNDGRAD	received undergraduate degrees at the same institution	26.3	19.9
UNDECON	were undergraduate economics majors	58.6	29.6
DIRECT	entered the program directly upon completion of bachelor's	57.7	28.9
OTHERSRC	entered the program from the work force	37.7	29.6
IN25MI	Majority of students drawn within 25 miles?	.135	.343
IN300MI	Majority of students drawn within 300 miles?	.328	.471
OUT300MI	Majority of students drawn from over 300 miles?	.504	.502
	Percentage of students who prior to this program graduated with an undergraduate degree from a		
PUBCOMP	public comprehensive university	59.4	30.2
REGUNIV	regional university	19.9	24.1

(Continued on next page)

TABLE 1—Continued

Variable	Description	<i>M</i> ^a	<i>SD</i>
PRIVCOMP	private comprehensive university	8.6	15.7
PRIVLIB	private liberal arts college	10.8	16.2
Financial aid			
TASSIST	Teaching assistantships available to terminal master's students?	.636	.483
PTASSIST	Percentage of students in this program who receive TAs?	18.1	26.1
RASSIST	Research assistantships available to terminal master's students?	.741	.439
PRASSIST	Percentage of students in this program who receive RAs?	25.9	28.2
DSTIP-R	Stipend of RAs	5,216	3,987
FELSCHOL	Fellowships or scholarships available to terminal master's students?	.531	.501
OTHERAID	Other financial aid available?	.161	.369
NEEDBASE	Any need-based financial aid?	.082	.276
MINFAID	Any minority specific financial aid?	.587	.494
Curriculum			
RGRDHRS	Required semester hours for master's	33.9	7.8
FULLTIME	Number of months typically taken by full-time students to graduate	20.0	6.1
	Number of graduate semester hours required in		
RMICRO	micro theory	3.47	1.65
RMACRO	macro theory	3.10	1.46
REMETRIC	econometrics	3.35	1.65
RMATHECO	mathematical economics	2.05	1.71
REQSPEC	Is there a specialty field requirement?	.326	.471
REQTHES	Is a master's thesis required?	.521	.501
COMPEXAM	Comprehensive exam required?	.592	.493
WRIEXAM	If yes, is it written?	.427	.497
ORALEXAM	If yes, is it oral?	.356	.481
Graduation rates and placement			
COMPLETE	Percentage of students who complete the program	76.4	15.5
POORPERF	Poor performance in classes most likely reason for not completing program	.603	.491
TRANSDOC	Transfer to doctoral program is most likely reason for not completing program	.081	.275
	Percentage of terminal master's students who upon completion begin		
DOCT1	a doctoral program in economics at same university	10.7	16.1
DOCT2	a doctoral program in economics at another university	17.5	16.2
DOCT3	a doctoral program in some other discipline	5.6	8.9

(Continued on next page)

TABLE 1—*Continued*

Variable	Description	<i>M</i> ^a	<i>SD</i>
GOVT	careers in government	32.3	18.0
PRIVSECT	careers in the private sector	49.5	23.5

^aAll yes or no questions: 0 = no; 1 = yes.

^bEven though respondents were requested to check only one primary mission, some insisted on checking both preparation for careers and for doctoral work.

programs in our sample stated that preparation of students for doctoral work was their primary mission; over 58 percent indicated preparation of students for careers in business and government was their primary mission. Even though they were asked to indicate only one primary mission, 17.2 percent of the program directors must have felt strongly about their programs' dual missions because they checked both responses.

The average size of departments associated with these programs was just over 21 full-time faculty members. The smallest department responding had 3 full-time faculty members, and the largest had 48 full-time faculty members. On average, these departments comprised about 11 percent women and nearly 9 percent minority faculty.

Sixty-eight percent of the programs required a standardized entrance exam (most of them used the GRE general test), but only 53 percent of these programs maintained a required minimum score on the test. Nearly 80 percent of these programs required a minimum undergraduate GPA for admittance, with an average minimum of 2.90. The lowest required GPA reported was 2.0, and the highest was 3.7 (on a 4.0 scale). This range is consistent with results reported by Sterrett and Barr (1983). In direct contradiction to results reported in Thornton and Innes (1988), over 85 percent of the programs reported some preliminary coursework as admissions prerequisites. Thornton and Innes (p. 173) reported that only "36 percent of institutions indicated certain course prerequisites," but we wonder if their definition of "certain course prerequisites" caused this number to be depressed. For those programs requiring some coursework as prerequisites, intermediate economics (80 percent) and statistics (67 percent) were required by the majority. Forty-eight percent required at least one calculus class, and almost 25 percent required two calculus classes. Our results are more consistent with those of an older study (Bowen 1953), which found that 46 percent of the programs required an undergraduate major and only 7 percent had no requirements concerning undergraduate economics. Finally, nearly all schools (97 percent) required the Test of English as a Foreign Language (TOEFL) of international students and on average, required a minimum TOEFL score of 553 (scores ranged from 500 to 600).

Programs in our sample had an average full-time enrollment of 19 students. These programs averaged enrollments of nearly 29 percent women. In 5 percent of the programs, the percentage of women was greater than or equal to 50 percent.

In another 5 percent of the programs, there were no women. The programs averaged 4.5 percent African American and nearly 39 percent international students. On average, 26 percent of their students received their undergraduate degrees at the same institution, about 58 percent of their students entered directly upon completion of a bachelor's degree, and about 38 percent entered after having participated in the work force. On average, 59 percent of the students in programs in our survey were undergraduate economics majors. This is consistent with the result reported earlier by Bowen (1953) that about 66 percent of all graduate students in economics were undergraduate majors. Finally, with respect to student characteristics, the majority of schools in our sample drew their students from further away than 300 miles and from public comprehensive universities.

In our sample, about 64 percent of the programs offered teaching assistantships (TA) and 74 percent offered research assistantships (RA). On average, 18 percent of each program's students were currently receiving teaching assistantships and nearly 26 percent were receiving research assistantships. Given requirements by accrediting agencies, it should be of no surprise that the relationship of TAs and RAs in doctoral programs in economics was opposite to that reported above for master's degree programs. Hansen (1991) reported that 31 percent of all full-time graduate students are financed by teaching assistantships, whereas only about 20 percent are receiving research assistantships. The majority of the programs in our sample also offered fellowships or scholarships as well as minority-specific financial aid.

Our data indicate that the average number of semester hours required for completion of a master's in economics is 33.9, and full-time students typically take 20 months to complete the program. These results are consistent with those previously reported (Bowen 1953, 6; Thornton and Innes 1988, 176; Barr, Aby, and Willhite 1991, 15). On average, programs required just over one three-semester-hour course in micro theory, macro theory, and econometrics, and only two hours of mathematical economics (again consistent with Thornton and Innes 1988, 175). Almost 33 percent of the programs required a specialty field, and just over half required a thesis. This last result appears to be in direct contradiction to the result reported by Thornton and Innes (1988, 175) that only "24 percent of institutions with programs reported a thesis requirement." Almost 60 percent reported a comprehensive exit exam requirement, with 43 percent indicating a written exam, 36 percent an oral exam, and the balance requiring both. Thornton and Innes (1988, 174) reported that 62 percent of institutions with a master's degree program required a comprehensive exam.

The average completion rate of students entering programs in our sample was 76 percent, with poor performance in classes being the most likely reason for students not completing in the majority of the programs. Other reported reasons included (in order of frequency) the taking of employment, incomplete thesis, and transfer to a doctoral program. Programs reported that beginning a career in business was the most typical activity pursued by students following completion of the degree, followed by starting a doctoral program and careers in government.

One final note with respect to the data involves a common criticism plaguing survey-based research-response bias. Specifically, in our sample, it could be

charged that larger, Ph.D.-granting departments would be more preoccupied and therefore less likely to complete and return the survey, thereby biasing our results in favor of smaller schools and departments not granting doctorates. To perform a quick check to determine the likelihood and extent of this potential problem, we compared the percentage of Ph.D.-granting schools in our surveyed population (50 percent) with the percentage of Ph.D.-granting schools in our sample (about 45 percent). Thus, a shift bias does exist to some extent and should be kept in mind when interpreting results, but it is doubtful that the shift bias influenced the gist of our results in any meaningful way.

DOES A PH.D. PROGRAM INFLUENCE THE MASTER'S PROGRAM?

Economics departments that offer a Ph.D. program as well as a master's degree program may differ from those departments that offer a master's degree but do not offer the Ph.D. To investigate the differences and similarities of master's degree programs in these two types of institutional settings, we compared the means of the programs housed in departments that offered the Ph.D. with the means of the programs housed in departments that did not offer the Ph.D. (Table 2).

TABLE 2
Means Based upon Whether or Not
Departments Offer the Ph.D.

Variable	<i>M</i> (Ph.D. = 0)	<i>M</i> (Ph.D. = 1)	<i>t</i>
PHD	.000	1.000	—
QUANT	0.512	.273	1.353
DOCWORK	0.183	0.197	0.215
BUSGOVT	0.610	0.545	0.784
BOTH	0.171	0.182	0.175
Departmental faculty			
FULFAC	15.718	28.048	8.763***
WOMFAC	11.375	10.384	0.708
MINFAC	10.467	6.732	2.025**
Admission requirements			
ENTREXAM	0.560	0.817	3.261***
MINIMUM	0.441	0.667	2.415**
MINUGPA	0.865	0.700	2.365**
REQGPA	2.859	2.949	1.969*
RCSRWRK	0.907	0.825	1.394
INTERECO	0.776	0.823	0.642
ONECALC	0.461	0.510	0.541
TWOCALC	0.200	0.314	1.456
STATS	0.737	0.569	1.991**
MINTOEFL	552.758	553.571	0.220

(Continued on next page)

TABLE 2—Continued

Variable	<i>M</i> (Ph.D. = 0)	<i>M</i> (Ph.D. = 1)	<i>t</i>
Student characteristics			
FTEENROLL	15.522	23.526	2.797***
WOMEN	28.274	28.446	0.061
AFRIAMER	4.047	5.343	0.641
FOREIGN	37.257	40.632	0.794
UNDGRAD	29.645	23.042	1.761*
UNDECON	61.029	54.333	1.118
DIRECT	56.577	60.715	0.706
OTHERSRC	37.080	37.775	0.110
IN25MI	0.213	0.036	2.960***
IN300MI	0.320	0.357	0.442
OUT300MI	0.427	0.582	1.755*
PUBCOMP	60.517	58.461	0.303
REGUNIV	21.043	18.238	0.503
PRIVCOMP	8.508	8.456	0.014
PRIVLIB	7.920	14.382	1.785*
Financial aid			
TASSIST	0.638	0.635	0.032
PTASSIST	15.343	21.838	1.379
RASSIST	0.800	0.667	1.816*
PRASSIST	26.465	26.519	0.011
DSTIP-R	4,897.714	5,941.617	1.354
FELSCHOL	0.450	0.635	2.223**
OTHEAID	0.175	0.143	0.516
NEEDBASE	0.091	0.070	0.429
MINFAID	0.392	0.847	5.995***
Curriculum			
RGRDHRS	34.028	33.895	0.095
FULLTIME	19.618	20.161	0.530
RMICRO	3.385	3.544	0.556
RMACRO	2.940	3.272	1.320
REMETRIC	3.307	3.368	0.209
RMATHECO	1.871	2.316	1.466
REQSPEC	0.308	0.333	0.318
REQTHES	0.563	0.475	1.023
COMPEXAM	0.538	0.656	1.395
WRITEXAM	0.444	0.378	0.688
ORALEXAM	0.254	0.511	2.817***
Graduation rates and placement			
COMPLETE	75.580	77.596	0.698
POORPERF	0.675	0.536	1.639
TRANSDOC	0.039	0.145	2.206**
DOCT1	3.865	19.357	5.248***
DOCT2	20.912	12.100	2.818***
DOCT3	5.927	3.846	0.970
GOVT	30.678	34.721	1.115
PRIVSECT	50.371	48.286	0.441

*Significant at .10 level; **significant at .05 level; ***significant at .01 level.

Departments that offered the Ph.D. were larger, in terms of both full-time faculty and full-time students enrolled in master's degree programs. Although there was no significant difference in the percentage of women faculty, departments that offered the Ph.D. actually did have a lower percentage of minority faculty. However because the Ph.D. departments had more full-time faculty, there was no significant difference in the number of minority faculty.

Ph.D. departments seemed to rely more on standardized tests and less on undergraduate performance than departments that did not offer the Ph.D. Ph.D. departments were more likely to require an entrance exam, and if an exam was required, they were more likely to have some minimum required score for candidates to be accepted into the master's program. However, Ph.D. departments were less likely to require a minimum undergraduate GPA for admission into the master's program. Ph.D. departments were also less likely to require applicants to have completed a statistics class before being admitted into the master's program.

Although the master's degree programs in the Ph.D. departments had more full-time students enrolled in the program, there were no significant differences in the percentage of women, African American, or foreign students enrolled in master's programs. Thus, scale did not play a significant role either in terms of a diversified faculty or a diversified student body (where diversification is measured in percentage terms).

The Ph.D.-granting departments drew a lower percentage of their master's students from their home university and a higher percentage of their students from over 300 miles away, whereas the non-Ph.D. departments had a higher percentage of students drawn from within 25 miles and with undergraduate degrees from their own institutions. This should not be surprising given the probable different missions (regional versus national) of different universities. Economics departments offering master's degrees but not the Ph.D. also had a larger percentage of students enrolled in master's degree programs who received their undergraduate degrees from private liberal arts colleges.

Although there were some slight differences in the financial aid variables, a surprising amount of similarity appeared to exist in the financial aid offerings to master's degree students in both the Ph.D. and non-Ph.D. master's programs. This could be an indication of the competitive market for quality master's students. It is interesting to note that a higher percentage of the non-Ph.D. departments had research assistantships available for master's students. Of course, faculty in these departments did not have Ph.D. students to assist them with their research. One other significant difference was in the availability of minority-specific financial aid: 84.7 percent of the Ph.D. schools had minority-specific financial aid available for their master's students, whereas only 39.2 percent of the non-Ph.D. schools had minority-specific financial aid available.

There was only one significant difference in the curriculum variables. Master's programs in the Ph.D. departments were much more likely to require their master's students to complete an oral exam, indicating that departments using this traditional form of examining their Ph.D. students had a tendency to use it in their master's programs as well.

Although the completion rates for the master's students were not significantly

different at the Ph.D. and non-Ph.D. schools, a greater percentage of Ph.D. schools reported that transferring to doctoral programs was the most likely reason for not completing the master's program. Over 19 percent of the students who did graduate from the master's program at Ph.D. schools entered the doctoral program in economics at the same university. Master's programs for Ph.D.-granting departments seemed to be a significant source for Ph.D. students. Over 31 percent of the students graduating from master's degree programs at Ph.D. schools entered a Ph.D. program in economics upon completion of their degrees. For non-Ph.D. schools, less than 25 percent of the students completing the master's degree entered a Ph.D. program upon completion of their master's degrees. Despite these differences, there was no significant difference in the variable *DOCWORK* which was a measure of the percentage of schools indicating that their primary mission is to prepare students for doctoral work. Thus, even though stated mission and program curricula were not different between Ph.D. and non-Ph.D. departments, the mere existence of and interaction with a Ph.D. program housed in the same department appeared to have a significant influence on whether or not terminal master's students decided to pursue a doctorate.

WHAT INFLUENCE DO QUANTITATIVE ADMISSION REQUIREMENTS HAVE?

We expected that differences in admission requirements would in some way influence the types of students, the structure and/or the goals, and the outcomes of master's degree programs. In examining the role of admission requirements, we separated our sample into two groups: The group we labeled the quantitative schools required candidates for admission to the master's program to have completed a minimum of either two semesters of calculus or one semester of calculus and a statistics class; the other group did not have this minimum requirement for admission. The mean values for these two types of master's programs are presented in Table 3. Our interest in this particular admission requirement stemmed from the ongoing discussion within the economics profession regarding the quantitative nature of graduate work and research. Some concern has been raised that the increasing quantitative requirements have tended to discourage certain types of students from pursuing a graduate degree in economics (Kasper et al. 1991). Those departments that do have quantitative admission requirements were less likely to have a primary goal of preparing their students to continue their studies at the doctoral level. At first glance, this may appear paradoxical, but requiring a quantitative background for admission would enable departments to teach their micro and macro classes to more closely model doctoral-level theory classes. For most of these students in the *BUSGOVT* (business/government) track, this was likely to be their last exposure to economic theory, and therefore programs with this stated mission "make it count." Another possibility is that because the well-prepared undergraduate students go directly into a doctoral program, those master's programs that do attempt to train students for doctoral studies find that the market for their programs is undergraduate students who do not have either the

TABLE 3
Means for Programs with Quantitatively Oriented Admissions Requirements

Variable	<i>M</i> (Quant = 0)	<i>M</i> (Quant = 1)	<i>t</i>
PHD	0.485	0.367	1.353
QUANT	0.000	1.000	—
DOCWORK	0.225	0.102	1.836*
BUSGOVT	0.549	0.653	1.212
BOTH	0.167	0.184	0.258
Departmental faculty			
FULFAC	22.840	18.000	2.685***
WOMFAC	11.379	10.046	0.906
MINFAC	9.380	7.347	1.016
Admission requirements			
ENTREXAM	0.711	0.625	1.030
MINIMUM	0.506	0.588	0.795
MINUGPA	0.775	0.833	0.800
REQGPA	2.907	2.889	0.4
RCRSWRK	0.770	1.000	3.757***
INTERECO	0.705	0.939	3.285***
ONECALC	0.154	1.000	16.287***
TWOCALC	0.385	0.021	5.008***
STATS	0.462	1.000	7.501***
MINTOEFL	554.156	551.378	0.730
Student characteristics			
FTENROLL	18.598	19.644	0.347
WOMEN	28.574	28.627	0.018
AFRIAMER	5.162	3.331	0.903
FOREIGN	37.613	40.664	0.702
UNDGRAD	22.649	32.248	2.577**
UNDECON	61.752	53.662	1.396
DIRECT	56.211	60.282	0.698
OTHERSRC	41.615	30.629	1.784*
IN25MI	0.151	0.106	0.718
IN300MI	0.333	0.319	0.166
OUT300MI	0.477	0.553	0.839
PUBCOMP	52.403	71.477	2.923***
REGUNIV	23.380	14.120	1.685*
PRIVCOMP	8.824	8.300	0.144
PRIVLIB	14.139	4.883	2.548**
Financial aid			
TASSIST	0.585	0.735	1.772*
PTASSIST	15.614	22.373	1.421
RASSIST	0.723	0.776	0.672
PRASSIST	19.415	37.864	3.667***
DSTIP-R	4,783.673	5,821.156	1.338
FELSCHOL	0.574	0.449	1.427
OTHERAID	0.202	0.082	1.871*

(Continued on next page)

TABLE 3—Continued

Variable	<i>M</i> (Quant = 0)	<i>M</i> (Quant = 1)	<i>t</i>
NEEDBASE	0.106	0.041	1.320
MINFAID	0.611	0.542	0.785
Curriculum			
RGRDHRS	34.859	32.022	2.007**
FULLTIME	19.957	20.064	0.098
RMICRO	3.467	3.463	0.016
RMACRO	3.228	2.871	1.390
REMETRIC	3.390	3.270	0.401
RMATHECO	2.098	1.970	0.403
REQSPEC	0.326	0.327	0.005
REQTHES	0.484	0.592	1.223
COMPEXAM	0.581	0.612	0.362
WRITEXAM	0.479	0.324	1.557
ORALEXAM	0.288	0.486	2.081**
Graduation rates and placement			
COMPLETE	75.346	78.302	1.010
POORPERF	0.636	0.542	1.075
TRANSDOC	0.103	0.042	1.254
DOCT1	12.672	7.176	1.612
DOCT2	17.831	16.974	0.263
DOCT3	5.783	5.304	0.208
GOVT	30.492	35.410	1.356
PRIVSECT	50.418	48.026	0.504

*Significant at .10 level; **significant at .05 level; ***significant at .01 level.

quantitative and/or economic theory backgrounds to enter doctoral programs directly.

There appeared to be no significant difference between departments with or without quantitative admission requirements in TOEFL score requirements. It has been recently speculated that some quantitatively oriented graduate economics programs are relaxing verbal skills requirements and recruiting international students who are highly skilled quantitatively. The findings of our survey, in terms of either required TOEFL score or percentage of foreign students in programs with quantitatively oriented admission requirements, do not provide any evidence to support this claim for master's programs in economics.

Those departments that had quantitative admission requirements recruited a higher percentage of their students from the undergraduate-degree recipients of that same university and recruited a lower percentage of students who entered the master's program directly from the work force. One likely explanation is that the math background of potential students currently in the work force may not be as strong as that of recent graduates, and therefore programs with quantitative admissions requirements draw fewer students from the work force. A higher percentage of their students also came from public comprehensive universities and a

lower percentage from private liberal arts colleges. What seemed surprising was that the quantitative admission requirements did not significantly affect the percentage of foreign students, women, or African American students. Similar to the results on Ph.D. offerings, the data indicate that this requirement did not seem to limit the diversity of students enrolled in master's degree programs.

Financial aid seemed to be more available in departments requiring a quantitative background. These schools were more likely to offer teaching assistantships to their terminal master's students. In addition, a higher percentage of students in these master's degree programs received research assistantships. Possible explanations for these findings are that students with quantitative backgrounds either are more qualified to teach or, in conjunction with typically accompanying computer skills, are more qualified to assist faculty with research projects.

There were only two significant differences in the curriculum. Those programs with quantitative admission requirements required fewer hours of graduate coursework for a master's degree. Perhaps this was because their students were better prepared because these programs were also more likely to require their students to have completed intermediate theory before being admitted to the program. The quantitative programs were more likely to require their students to complete an oral comprehensive exam.

No significant differences existed between the quantitative and nonquantitative programs for the variables in our study that measured graduation rates and placement. Thus, it appears they made no significant contribution to the attainment of these simple "outcomes" measures.

WHAT INFLUENCE DOES PROGRAM MISSION HAVE?

The means for programs that indicated that their primary mission was to prepare their students for doctoral studies (DOCWORK = 1) are compared in Table 4 with the means for programs that indicated that their primary mission was to prepare students for careers in business and government. Although the survey sent to directors of the master's programs asked that the survey respondents check only one of these responses, a significant number of the respondents of completed surveys (over 17 percent) checked both of these responses. The means for these programs are also presented in Table 4.

The programs whose mission was to prepare students for doctoral work had a lower percentage of women on their faculty and a lower percentage of female students enrolled in their master's programs. However, it may be that this lower percentage of female students was related more to the lower percentage of female faculty than to the program mission. Interestingly, this brings up the possibility of a kind of "vicious circle" concerning women and graduate training in economics. If there are relatively few women in economics Ph.D. programs, this will lead to relatively few women on the faculty of departments offering master's degrees with a primary mission of training for doctoral work. If relatively few women are on the faculties of these departments, they may not be as successful in recruiting and graduating women students, and fewer women master's students will go on for Ph.D. degrees, thus completing the circle. Even though the differences are not

TABLE 4
Means Based upon Different Program Missions

Variable	<i>M</i> DOCWORK = 1	<i>M</i> BUSGOVT = 1	<i>t</i>	<i>M</i> RBOTH = 1
PHD	0.464	0.419	0.421	0.462
QUANT	0.179	0.364	1.841*	0.615
DOCWORK	1.000	0.000	—	0.000
BUSGOVT	0.000	1.000	—	0.000
BOTH	0.000	0.000	—	1.000
Departmental faculty				
FULFAC	20.593	21.025	0.186	20.885
WOMFAC	7.957	12.715	2.537**	9.632
MINFAC	12.004	8.264	1.439	6.375
Admission requirements				
ENTREXAM	0.704	0.671	0.316	0.640
MINIMUM	0.435	0.529	0.779	0.722
MINUGPA	0.778	0.778	0.000	0.840
REQGPA	2.984	2.884	1.665	2.867
RCRSWRK	0.926	0.810	1.416	0.920
INTERECO	0.846	0.770	0.812	0.792
ONECALC	0.423	0.486	0.553	0.458
TWOCALC	0.269	0.203	0.699	0.391
STATS	0.500	0.676	1.601	0.792
MINTOEFL	558.269	552.420	1.157	550.000
Student characteristics				
FTENROLL	21.840	18.081	0.966	19.000
WOMEN	20.789	30.528	3.124***	27.717
AFRIAMER	2.920	5.373	0.870	3.387
FOREIGN	41.238	39.436	0.316	34.565
UNDGRAD	20.638	28.254	1.508	27.305
UNDECON	70.200	52.895	2.264**	61.950
DIRECT	66.643	52.930	1.843*	61.300
OTHERSRC	31.333	41.196	1.204	34.600
IN25MI	0.083	0.171	1.047	0.087
IN300MI	0.292	0.341	0.452	0.304
OUT300MI	0.583	0.439	1.243	0.609
PUBCOMP	53.223	63.576	1.167	55.632
REGUNIV	7.769	21.057	1.847*	21.211
PRIVCOMP	19.814	6.035	2.701***	7.579
PRIVLIB	8.950	11.252	0.443	12.222
Financial aid				
TASSIST	0.464	0.642	1.658	0.885
PTASSIST	23.721	15.701	1.314	20.733
RASSIST	0.786	0.704	0.833	0.923
PRASSIST	33.955	20.922	1.908*	34.783
DSTIP-R	4,661.053	4,905.216	0.232	7,263.695
FELSCHOL	0.607	0.543	0.583	0.538

(Continued on next page)

TABLE 4—Continued

Variable	<i>M</i> DOCWORK = 1	<i>M</i> BUSGOVT = 1	<i>t</i>	<i>M</i> RBOTH = 1
OTHERAID	0.143	0.136	0.093	0.308
NEEDBASE	0.040	0.089	0.790	0.120
MINFAID	0.577	0.593	0.140	0.577
Curriculum				
RGRDHRS	32.538	34.658	1.131	33.417
FULLTIME	18.107	20.329	1.651	20.308
RMICRO	3.643	3.470	0.460	3.307
RMACRO	3.417	3.112	0.934	2.707
REMETRIC	3.654	3.190	1.236	3.427
RMATHECO	2.795	1.782	2.613**	2.067
REQSPEC	0.333	0.321	0.114	0.320
REQTHES	0.571	0.465	0.973	0.615
COMPEXAM	0.607	0.595	0.110	0.600
WRITEXAM	0.500	0.441	0.477	0.333
ORALEXAM	0.318	0.309	0.082	0.556
Graduation rates and placement				
COMPLETE	82.417	73.507	2.341**	78.957
POORPERF	0.840	0.506	3.070***	0.667
TRANSDOC	0.080	0.085	0.084	0.083
DOCT1	19.278	7.190	2.975***	11.059
DOCT2	32.474	12.818	4.953***	17.636
DOCT3	11.167	5.070	1.976*	2.167
GOVT	34.350	32.559	0.383	31.087
PRIVSECT	34.150	56.917	4.011***	44.913

*Significant at .10 level; **Significant at .05 level; ***Significant at .01 level.

significant, it is interesting to note that programs whose mission it was to prepare students for doctoral programs had a higher percentage of minority faculty and a lower percentage of minority students.

Programs whose primary mission was to prepare students for doctoral studies had a greater percentage of students who completed an undergraduate major in economics and a greater percentage of students who enrolled in a master's program directly upon completion of their undergraduate degree. A greater percentage of the students in the DOCWORK master's degree programs attended private comprehensive universities, and a lower percentage attended regional universities.

Although there was no significant difference for any of the individual variables that measure admission requirements, programs whose primary mission was the preparation of students for careers in business and government were more likely to be classified as having quantitative admission requirements. The only significant difference in curriculum was that the average number of mathematical economics hours that were required was higher for the DOCWORK master's degree programs, perhaps because these programs did not typically require as much math

in their entrance requirements. This remarkable degree of similarity indicated that either the skills and tools needed for careers and doctoral work were the same or that programs were failing to recognize the different skills necessary and/or adjust their programs accordingly.

Over 82 percent of the students in the DOCWORK master's degree programs completed their degrees, whereas less than 74 percent of the students in the programs whose primary mission was preparation for business and government completed their master's program. When asked what was the primary reason for students' not completing the master's program, most schools listed poor performance in classes. The percentage of schools indicating that this was the primary reason for students' not completing this program was much higher for the DOCWORK programs than for the BUSGOVT programs (84 percent versus 51 percent). One possible explanation is that students in BUSGOVT programs were more likely to accept a full-time job if it became available before graduation.

As one would expect, a much greater percentage of the students who received their master's degrees from the DOCWORK programs went directly into a doctoral program after they graduated from the master's program. On the other hand, the majority of graduates from the BUSGOVT programs took jobs in the private sector after completing their master's degree. One interesting question that our survey did not address was the issue of how the primary mission of the programs was determined. Did the causality run from mission to outcomes, or did the placement of students in graduate programs and jobs determine the program's mission? Regardless, one cannot help but be struck by the similarities in admission requirements, student characteristics, and especially curriculum for programs that espouse very different goals for their programs.

ARE AGRICULTURAL PROGRAMS DIFFERENT?

Our survey population differed from previously published surveys because we included master's degree programs in agricultural economics. Data comparing those programs with the remaining more traditional economics master's degree programs are presented in Table 5.

The agricultural economics programs were more likely to be housed in departments that offered Ph.D. degrees, were more likely to have quantitative admission requirements, and were less likely to have indicated that their primary mission was to prepare their master's students to enter a doctoral program. (They were more likely to indicate that both DOCWORK and BUSGOVT are the primary missions.) These programs were offered by departments that had a lower percentage of women faculty members.

There were several significant differences in admission requirements. Agricultural economics departments were more likely to specify a minimum score on an entrance exam if they required applicants to take an entrance exam. On the other hand, they were less likely to require a minimum GPA. As we have already mentioned, the quantitative entrance requirements were stiffer for the agricultural economics programs: These programs were more likely to require an undergraduate

TABLE 5
Means for Agricultural Economics Programs

Variable	M: AG	M: NONAG	t
PHD	0.600	0.398	2.116**
QUANT	.486	.276	2.351**
DOCWORK	0.086	0.216	1.738*
BUSGOVT	0.600	0.578	0.234
BOTH	0.314	0.129	2.579**
Departmental faculty			
FULFAC	23.727	20.463	1.600
WOMFAC	8.141	11.802	2.275**
MINFAC	7.828	9.016	0.540
Admission requirements			
ENTREXAM	0.636	0.695	0.629
MINIMUM	0.727	0.484	2.007**
MINUGPA	0.576	0.865	3.770***
REQGPA	2.897	2.901	0.066
RCRSWRK	0.839	0.856	0.233
INTERECO	0.846	0.782	0.717
ONECALC	0.808	0.396	3.941***
TWOCALC	0.154	0.270	1.223
STATS	0.846	0.624	2.172**
MINTOEFL	549.242	554.573	1.295
Student characteristics			
FTENROLL	22.563	17.758	1.455
WOMEN	27.360	28.996	0.512
AFRIAMER	4.445	4.510	0.029
FOREIGN	40.610	38.106	0.517
UNDGRAD	31.093	24.689	1.506
UNDECON	46.327	62.490	2.490**
DIRECT	48.000	60.705	1.947*
OTHERSRC	47.625	34.565	1.905*
IN25MI	0.032	0.167	1.928*
IN300MI	0.323	0.330	.078
OUT300MI	.645	.461	1.807*
PUBCOMP	69.333	55.435	1.939*
REGUNIV	15.478	21.695	1.046
PRIVCOMP	5.696	9.793	1.063
PRIVLIB	7.455	12.082	1.146
Financial aid			
TASSIST	0.686	0.620	0.695
PTASSIST	13.081	19.725	1.251
RASSIST	0.971	0.667	3.723***
PRASSIST	40.419	21.105	3.449***
DSTIP-R	8,183.575	3,966.434	5.714***
FELSCHOL	0.743	0.463	2.951***
OTHERAID	0.086	0.185	1.392

(Continued on next page)

TABLE 5—Continued

Variable	M: AG	M: NONAG	t
NEEDBASE	0.114	0.071	0.803
MINFAID	0.714	0.544	1.778*
Curriculum			
RGRDHRS	32.452	34.300	1.153
FULLTIME	22.286	19.236	2.631***
RMICRO	3.480	3.461	0.059
RMACRO	2.404	3.318	3.254***
REMETRIC	2.765	3.542	2.418**
RMATHECO	1.706	2.177	1.382
REQSPEC	0.091	0.398	3.405***
REQTHES	0.657	0.477	1.865*
COMPEXAM	0.771	0.533	2.533**
WRIEXAM	0.148	0.518	3.532***
ORALEXAM	0.778	0.217	6.074***
Graduation rates and placement			
COMPLETE	82.344	74.293	2.587**
POORPERF	0.545	0.621	0.772
TRANSDOC	0.031	0.097	1.187
DOCT1	8.462	11.551	0.834
DOCT2	14.385	18.518	1.139
DOCT3	4.737	5.960	0.505
GOVT	35.867	30.905	1.279
PRIVSECT	46.833	50.605	0.743

*Significant at .10 level; **significant at .05 level; ***significant at .01 level.

statistics class and at least one calculus class before applicants were accepted into the master's program.

Students in the agricultural economics programs were less likely to have been economics majors at the undergraduate level and were less likely to have entered the program directly after completing their undergraduate degree. They were more likely to enter the master's program from the work force.

A greater percentage of the students in the agricultural master's programs were recruited from outside a 300-mile radius of the university, while a smaller percentage of the students were recruited from within a 25-mile radius. Students in these programs were also more likely to have attended a public comprehensive university for their undergraduate studies.

Ninety-seven percent of the agricultural economics programs offered research assistantships to terminal master's degree students, and 40 percent of the students in these programs received a research assistantship. Both of these percentages were higher than the percentages for the other master's degree programs. The amount of funding for these assistantships was also much higher. The average stipend for a master's student receiving a research assistantship in an agricultural

economics program was \$8,183, compared with an average of \$3,966 for the research assistantship stipend in the other master's degree programs. A greater percentage of the agricultural economics master's programs offered other types of fellowships, scholarships, and financial aid targeted for minority students.

There were also several significant differences in the curriculum. The number of months that it took a typical student to complete the master's program was higher (22 versus 19) for the agricultural programs. This may have been due to the availability of financial aid that allowed students the financial freedom to take a longer period of time for their studies. The agricultural economics programs, on average, required fewer credit hours of macroeconomics and econometrics and were less likely to require a specialty field. However, they were more likely to require a thesis and comprehensive exam. Of the schools requiring a comprehensive exam, the agricultural economics programs were more likely to use an oral exam format.

A greater percentage of the students in the agricultural economics programs completed the master's degree. Future research might focus on the role of financial assistance in increasing the completion percentage.

CONCLUSION

The goal of our research was to "take the pulse" of master's degree programs in economics across the country. We have described what these programs attempt to accomplish and with what inputs (institutional programs and student characteristics) they attempt to accomplish it. Even though programs may have different missions or desired outcomes, there is remarkable similarity across master's degree programs, in economics, especially in terms of admissions and program requirements (with agricultural economics programs being the exception). This similarity may be due to a combination of factors. It may exist in response to the demands of students who are uncertain about future education and career objectives and therefore desire preparation that would be appropriate for either doctoral programs or government and business careers. Another explanation may be that many of us involved in these programs have not identified our desired outcomes and developed programs to meet those outcomes, but instead have allowed programs to develop influenced by institutional characteristics and traditional practices and have then attempted to find a mission that is consistent with our program. For example, departments may be reluctant to diversify for fear of reducing already small enrollments. Although the foregoing explanations are complementary, one fruitful avenue for further research would be examination of the causes of similarities in master's in economics programs.

If programs at this level are to be successful, and not merely continue to exist, an ongoing process of evaluating the role for master's in economics programs is imperative. The process of review may lead to a clearer definition of desired outcomes and therefore further diversification of inputs (especially admissions and program requirements). It is our hope that the foregoing study will clarify some of the issues and motivate some reevaluation of master's programs in economics.

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