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PUBLICATION PRODUCTIVITIES OF U.S. ECONOMICS DEPARTMENT GRADUATES

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The decision to invest upwards of $50,000 in tuition and foregone earnings for a Ph.D. degree clearly ranks as one of the more important in a person's lifetime. No doubt most students recognize that this decision will affect the nature of their work for 30 to 40 years as well as their income. However, it is probably less evident at least to graduating seniors that the choice of graduate schools likely will have an important bearing on their professional success (or lack of it) especially if they aspire to an academic career of teaching and research.

The main purpose of this article is to provide information that may be useful to graduating seniors faced with the decision of choosing one of the 101 departments offering the Ph.D. degree in economics, or the 30 separate departments granting a Ph.D. in agricultural economics.[1/] True, not all students are able to obtain their first choice of schools, but the information to be presented should be of value in formulating their choices.

Data and Procedure

To assess the publication record of departmental graduates, the authors of articles in 14 major economics and statistics journals are identified by origin of training.[2/] (The journals are listed at the bottom of table 1.)

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* University of Minnesota. The author wishes to acknowledge the assistance of Carolyn Crane in the collection of data.

Table 1 -- *Number of Articles in 13 Economics and Statistics Journals From 1962 through 1972 produced by 1960-69 Graduates of Respective Economics Departments.

	School	# articles		School	# articles
1.	Harvard	203.3	16.	Pennsylvania	27.2
2.	MIT	151.5	17.	Purdue	22.4
3.	Chicago	136.7	18.	U.C.L.A.	22.0
4.	Yale	92.8	19.	U. of Washington	21.8
5.	Berkeley	91.9	20.	Brown	19.5
6.	Stanford	84.4	21.	Michigan State	18.0
7.	Princeton	64.8	22.	Cornell	16.7
8.	Wisconsin	57.9	23.	U. of Virginia	16.5
9.	Northwestern	40.0	24.	Rochester	15.0
10.	Columbia	38.5	25.	U. of North Carolina	14.3
11.	Minnesota	37.2	26.	Illinois	13.8
12.	Johns Hopkins	33.2	27.	Indiana	12.5
13.	Michigan	33.2	28.	U. of Texas	11.5
**14.	Carnegie-Mellon	31.8	29.	Iowa State	9.5
15.	Duke	27.8	30.	Tulane	9.4

* Journals include: American Economic Review, Econometrica, Economic Development and Cultural Change, Economic Journal, Economica, International Economic Review, Journal of the American Statistical Association, Journal of Political Economy, Quarterly Journal of Economics, Review of Economic Studies, Review of Economics and Statistics, Southern Economics Journal, and Western Economics Journal.

** Formerly Carnegie Institute of Technology.

To attain some degree of homogeneity, only refereed articles are included, omitting communications, research notes, critiques, replies, annual meetings papers, book reviews, etc. A total of 3044 articles authored by the 1930-69 graduates of U. S. institutions during the 1962-72 period are included in the sample.[3/] Most of the discussion to follow will center on the publication record of the 1960-69 graduates to provide reasonably up to date information on program quality, although later in the paper a comparison is made between the publication records of the younger and older members of the profession.

Publication Record of 1960-69 Graduates[4/]

We present in table 1 the number of articles authored by 1960-69 graduates of the respective economics departments, ranked from one through thirty.[5/] (Bear in mind that these departments represent where the authors obtained their training rather than where the authors were located when the articles were written.) The authors trained in the 30 departments listed in table 1 produced about 80 percent of all the articles in the included journals during the 1962-72 period. And the graduates of the top ten ranked departments in table one produced over one-half (56 percent) of all articles by 1960-69 graduates. Of course, one should not look too despairingly at the departments on the right hand side of table 1 since 71 of the possible 101 departments are not even listed.

Although it may be interesting to know which graduates are producing the major share of the articles in the professional journals, the rankings can be a misleading index of program quality because of differences in size of departments. For example, even if the graduates of department A produce twice as many articles as those of department B the quality of A's

program could hardly be considered higher than B's if A turned out more than twice the number of graduates. Because our interest here is mainly on quality rather than quantity, we need to take account of number of graduates of each department.

In table 2 we present the ratio of number of Ph.D.'s granted during the 1960-69 period to number of articles produced by these Ph.D.'s--the Ph.D./publication ratio. In this case the top 30 departments are ranked according to this ratio.[6/] The lower the ratio the greater the article output per Ph.D. A ratio of 1.12, for example, means that on the average there were 1.12 Ph.D.'s granted during the 1960-69 period by the department for each article published during the 1962-72 period by its graduates.

The ranking of the departments in table 2 provides a proxy measure of the quality of training found in the various Ph.D. programs during the 1960-69 period. Since personnel and programs tend to change rather slowly, the ratios can be regarded as fairly good indicators of program quality through a greater part of the 1970's.

A couple of interesting points emerge from table 2. First is the substantial rise of Carnegie—Mellon, Brown, and Rochester in the table 2 ranking compared to that of table 1. Although the departments are small compared to Harvard, MIT, Chicago and other "name" schools (and Rochester's program is new), they appear to be offering first rate Ph.D. programs. There is a tendency for graduates of the larger departments to be the most visable in the literature simply because there are more of them. And as a result, the quality of small or new programs may be underestimated by the profession, and these departments overlooked by prospective graduate students. This hypothesis is supported by the 1964 rankings of "effectiveness

Table 2 -- Number of Ph.D.'s Granted by Respective Economics Departments, 1960-69, per Number of Articles Produced in Economics and Statistics Journals, 1962-72, by these Graduates.

	Department	Ph.D.'s/article		Department	Ph.D.'s/article
1.	Carnegie-Mellon	.66	16.	Tulane	3.72
2.	Brown	.87	17.	Michigan	3.83
3.	MIT	.92	18.	Wisconsin	3.85
4.	Johns Hopkins	.97	19.	Virginia	3.90
5.	Chicago	1.00	20.	U.C.L.A.	4.27
6.	Yale	1.12	21.	North Carolina	4.55
7.	Princeton	1.13	22.	Cornell	4.84
8.	Rochester	1.47	23.	Iowa State	5.26
9.	Harvard	1.48	24.	U. of Washington	5.82
10.	Stanford	1.71	25.	Pennsylvania	6.42
11.	Duke	2.12	26.	Columbia	6.54
12.	Berkeley	2.36	27.	Michigan State	6.83
13.	Northwestern	2.50	28.	Indiana	7.84
14.	Minnesota	2.88	29.	Washington U.	11.58
15.	Purdue	3.43	30.	Texas	14.00

of doctoral program" and "quality of graduate faculty" presented by Allan Cartter (1965). These rankings based on a faculty opinion survey more closely approximate the rankings based on number of journal articles published (presented in table 1) than on the Ph.D./publication ratios (table 2).

A second point of interest in table 2 is the relatively large variation in Ph.D./publication ratios. For example, the average ratio of the last 5 departments (9.35) is over ten times as large as the ratio of the first five (.88). Although we do not wish to imply that the "quality" of the Ph.D. programs of the top five departments is ten times that of the lower five, there does appear to be a substantial difference. At the same time, it should be stressed that all the departments listed in table 2 rank among the upper one-third of all departments in the country awarding the Ph.D., at least according to the Ph.D./publication ratio criterion.[7/] Indeed there are a number of departments whose 1960-69 Ph.D.'s did not publish in any of the included journals during this time which gives them a Ph.D./publication ratio approaching infinity.

Selected Journals

In an attempt to test for possible differences in kinds or emphasis of training between departments, number of articles and Ph.D./publication ratios for selected journals are presented in table 3. One might hypothesize that graduates of programs strong in economic theory would tend to show up on the pages of the American Economic Review (AER) while the graduates of those departments emphasizing statistics and econometrics would more likely publish in Econometrica.

Table 3 -- Articles Published in 1962-72 Issues of Selected Journals and Ph.D./Publication Ratios by the 1960-69 Graduates of Respective Departments.

A

American Economic Review

Articles			Ph.D./Publication Ratio		
1.	MIT	17.7	1.	Carnegie-Mellon	2.53
2.	Yale	13.3	2.	Brown	6.80
3.	Chicago	12.8	3.	Rochester	7.33
4.	Harvard	12.8	4.	Yale	7.80
5.	Berkeley	8.5	5.	MIT	7.92
6.	Carnegie-Mellon	8.3	6.	Johns Hopkins	8.00
7.	Stanford	8.0	7.	Chicago	10.60
8.	Wisconsin	5.3	8.	Princeton	16.22
9.	Princeton	4.5	9.	Stanford	18.00
10.	Johns Hopkins	4.0	10.	Harvard	23.38
11.	Michigan	3.5	11.	Berkeley	25.53
12.	Northwestern	3.5	12.	Virginia	25.60
13.	Columbia	3.0	13.	Purdue	25.67
14.	Purdue	3.0	14.	Northwestern	28.57
15.	Rochester	3.0	15.	Wisconsin	41.84

Table 3 -- (continued)

B

Econometrica

Articles			Ph.D./Publication Ratio		
1.	Harvard	24.3	1.	Carnegie-Mellon	3.82
2.	MIT	15.7	2.	Rochester	7.33
3.	Chicago	12.0	3.	Brown	8.50
4.	Wisconsin	9.5	4.	MIT	8.93
5.	Yale	9.5	5.	Yale	10.95
6.	Stanford	8.8	6.	So. Illinois	11.00
7.	Berkeley	6.7	7.	Chicago	11.33
8.	Carnegie-Mellon	5.5	8.	Harvard	12.37
9.	Purdue	4.7	9.	Stanford	16.31
10.	Minnesota	4.2	10.	Purdue	16.49
11.	Pennsylvania	3.0	11.	Wisconsin	23.47
12.	Rochester	3.0	12.	Georgetown	24.00
13.	Brown	2.0	13.	Minnesota	25.18
14.	Michigan	2.0	14.	Berkeley	32.15
15.	Northwestern	1.5	15.	New Sch. Soc. Res.	39.00
	Princeton	1.5			
	U.C.L.A.	1.5			

Table 3 -- (continued)

C

Journal of Political Economy

Articles			Ph.D./Publication Ratio		
1.	Chicago	49.8	1.	Chicago	2.73
2.	MIT	26.3	2.	Johns Hopkins	2.96
3.	Harvard	21.8	3.	Rice	3.50
4.	Berkeley	15.8	4.	Carnegie-Mellon	3.82
5.	Yale	15.8	5.	Case Inst.	4.00
6.	Stanford	13.7	6.	MIT	5.31
7.	Princeton	11.5	7.	Princeton	6.35
8.	Northwestern	11.0	8.	Yale	6.57
9.	Johns Hopkins	10.8	9.	Wayne State	7.50
10.	Columbia	10.5	10.	Brown	8.50
11.	U. of Washington	8.5	11.	So. Illinois	9.00
12.	Minnesota	7.0	12.	Northwestern	9.09
13.	Virginia	7.0	13.	Virginia	9.85
14.	Carnegie-Mellon	5.5	14.	Stanford	10.53
15.	Duke	5.0	15.	Tulane	11.67

Table 3 -- (continued)

D

Review of Economics and Statistics

Articles			Ph.D./Publication Ratio		
1.	Harvard	48.9	1.	Brown	5.67
2.	MIT	21.8	2.	Harvard	6.14
3.	Yale	16.3	3.	Yale	6.37
4.	Chicago	13.5	4.	MIT	6.41
5.	Wisconsin	9.5	5.	Princeton	9.73
6.	Pennsylvania	8.8	6.	Chicago	10.07
7.	Michigan	7.5	7.	Rutgers	16.00
8.	Princeton	7.5	8.	Michigan	16.93
9.	Berkeley	7.3	9.	Pennsylvania	19.82
10.	Stanford	6.8	10.	Stanford	21.08
11.	Columbia	4.0	11.	Cornell	21.60
12.	Cornell	3.8	12.	Rochester	22.00
13.	Minnesota	3.5	13.	Wisconsin	23.47
14.	Northwestern	3.3	14.	Berkeley	29.60
15.	Brown	3.0	15.	Northwestern	30.03

Table 3 -- (continued)

E

*American Journal of Agricultural Economics

Articles			Ph.D./Publication Ratio		
1.	Berkeley	30.0	1.	Chicago	1.21
2.	Chicago	27.3	2.	Harvard	1.54
3.	Iowa State	25.3	3.	Stanford (FRI)	1.69
4.	Michigan State	21.3	4.	Berkeley	3.17
5.	Minnesota	20.8	5.	Minnesota	3.23
6.	Harvard	12.3	6.	Iowa State	3.91
7.	Purdue	10.7	7.	North Carolina St.	4.31
8.	North Carolina State	7.2	8.	Michigan State	4.41
9.	Stanford (FRI)	6.5	9.	Purdue	6.45
10.	Wisconsin	6.3	10.	Penn. State	8.50
11.	Illinois	6.0	11.	Illinois	10.00
12.	Penn. State	4.0	12.	Okla. State	10.33
13.	Missouri	3.3	13.	Wisconsin	12.50
14.	Ohio State	3.3	14.	Missouri	13.03
15.	Cornell	3.0	15.	Cornell	25.00
	Okla. State	3.0			

* Journal of Farm Economics until 1968.

However, on the basis of the data presented in tables 3A and 3B, this hypothesis does not appear to be borne out. The highest ranking five departments for the AER are the same departments that rank one through five for Econometrica, although the order of ranking is slightly different between the two journals. Moreover 11 of the top 15 ranked departments in the AER also are in the top 15 of Econometrica. There is some indication that Minnesota and Wisconsin graduates tend to gravitate towards the quantitative pole which may be a reflection of the kind of training they receive.[8] But in general it appears that departments offering strong programs in economic theory also prepare their students well in quantitative methods.

It has been observed that faculty of departments which issue a professional journal tend to publish in these journals somewhat more frequently than faculty of other departments [see Pan Yotopoulos (1961)]. On the bases of tables 3C and 3D, the same tendency appears to be true for the graduates of these departments. Graduates of the University of Chicago, (which puts out the Journal of Political Economy) have nearly twice as many articles in this publication as second ranked MIT. Chicago graduates also rank first on the basis of the JPE Ph.D./publication ratio, although not greatly ahead of Johns Hopkins. The same relationship appears to hold true for the Review of Economics and Statistics published by Harvard. In terms of total articles, Harvard graduates authored over twice as many as second ranked MIT, although in regard to the Ph.D./publication ratio, Harvard ranks second to Brown and just slightly higher than Yale and MIT.

Agriculture

Agricultural economics basically is an applied discipline within the field of economics much as money and banking, public finance, international trade, economic development, etc. However because of institutional arrangements, this particular field traditionally has been the domain of separate agricultural economics departments.[9] The American Journal of Agricultural Economics (formerly Journal of Farm Economics) represents the major professional journal in this field. The ranking of departments according to total articles and Ph.D./publication ratios are presented in table 3E.[10] Perhaps most notable is the one, two, three ranking of the private schools (Chicago, Harvard, and Stanford's Food Research Institute) by the Ph.D./publication ratio criterion.

Pre-1960 Graduates

So far we have looked exclusively at the publication record of 1960-69 graduates in the 1962-72 issues of the various journals. Now let us examine the Ph.D./publication ratios of pre-1960 graduates for these journals also during the 1962-72 period (table 4). A few departments that did not show up on the 1960-69 ranking (table 2) hold prominent positions in table 4. Perhaps most notable is Iowa State, ranking first for the 1940's graduates and third for those receiving their degrees during the 1950's.

Another item of interest is the progressive increase in the ratios for graduates of past decades. In other words, the number of Ph.D.'s granted per article published increases for the older graduates. This is shown somewhat more clearly by the figures below which are the average Ph.D./publication ratios for the top ten departments for each decade. It

1960-69:	1.03
1950-59:	1.71
1940-49:	4.22
1930-39:	15.58

appears therefore that publishing in the professional journals is a young person's game although not exclusively of course.

Pre-1960 Ph.D./publication ratios for agricultural economics graduates are presented in table 6. Wisconsin graduates top the list for the 1930's, giving way to Iowa State and Chicago trained people in the 1940's and 1950's respectively. Chicago, remaining in first place during the 1960's, was the only department whose graduates topped the list for two consecutive decades, 1950 through 1969.

The phenomenon of increasing Ph.D./publication ratios for older graduates also holds true for agriculture. The average ratio for the top five departments by decade are presented below.

1960-69:	2.17
1950-59:	3.55
1940-49:	5.63
1930-39:	10.20

It is interesting to note that the Ph.D./publication ratios for agriculture which come from a single journal are not much higher (the 1930-39 ratio is actually lower) than the ratios for the general economists which are derived from 13 journals. It would seem, therefore, that agricultural economists are somewhat more "article prone" than their colleagues in general economics departments.

*Table 4 -- Ph.D./Publication Ratios for Pre-1960 General Economics Graduates by Decades (1962-72 Articles)

1950-59			1940-49			1930-39		
1.	Yale	.76	1.	Iowa State	1.20	1.	Chicago	2.44
2.	Johns Hopkins	1.03	2.	Harvard	2.76	2.	North Carolina	7.00
3.	Iowa State	1.44	3.	Chicago	2.81	3.	Berkeley	9.78
4.	Chicago	1.52	4.	Missouri	3.00	4.	Princeton	10.00
5.	North Carolina	1.64	5.	MIT	3.31	5.	Columbia	11.04
6.	Duke	1.86	6.	Brown	4.00	6.	Yale	19.00
7.	MIT	2.32	7.	Yale	4.31	7.	Penn.	20.50
8.	Harvard	2.38	8.	Stanford	6.00	8.	Wisconsin	24.50
9.	Berkeley	2.81	9.	Northwestern	6.80	9.	Harvard	24.57
10.	Princeton	3.33	10.	Berkeley	8.00	10.	Northwestern	27.00
11.	Michigan	4.37	11.	Cornell	8.50			
12.	U.C.L.A.	4.42	12.	Penn.	11.33			
13.	Stanford	5.17	13.	Minnesota	14.67			
14.	Columbia	5.42	14.	Michigan	14.84			
15.	Minnesota	6.21	15.	Texas	19.50			

* Includes Departments with more than 5 graduates over the respective decade. The 1930-39 decade includes only 10 departments because these were the only departments having 5 or more graduates during the decade that had graduates who published during the 1962-72 period in the journals considered.

*Table 5 -- Ph.D./Publication Ratios for Pre-1960 Agricultural Economics Graduates by Decades.

(1962-72 Articles)

1950-59		1940-49		1930-39	
1. Chicago	1.92	1. Iowa State	2.49	1. Wisconsin	4.21
2. Berkeley	2.87	2. Illinois	3.67	2. Harvard	4.80
3. Iowa State	3.09	3. Berkeley	4.67	3. Berkeley	5.00
4. Harvard	4.46	4. Minnesota	7.33	4. Ohio State	5.00
5. Illinois	5.40	5. Harvard	10.00	5. Minnesota	32.00
6. N. C. State	6.00	6. Chicago	16.00	6. Cornell	44.00
7. Minnesota	6.24	7. Cornell	59.03		
8. Penn. State	8.20				
9. Mich. State	10.25				
10. Purdue	11.33				
11. Wisconsin	12.63				
12. Ohio State	14.13				
13. Cornell	14.67				

* Includes all departments with 5 or more Ph.D.'s whose graduates published in the JFE during the respective decade.

Some Hypotheses

We have refrained from attempting to explain the large differences in Ph.D./publication ratios between the graduates of departments in order to separate fact from speculation. In searching for possible explanations the two that immediately come to mind are quality of faculty and capability of their graduate students. A good library also should be included, although it is not likely that a department could attract and keep first rate faculty without a first rate library.

The characteristics of a first rate faculty, of course, is another question. They will likely be individuals which have received the benefit of training in the best departments of their time and have published in the major journals. They will be teachers that utilize economic theory to a large extent but not to the exclusion of real world problems. Their reading lists will be long, but more important will include the best that is available on the topics at hand. They will be teachers that are willing to learn from their students and instill a feeling of self-confidence in them.

The program of work will include regularly scheduled seminars or workshops where students and faculty present the procedures and results of original research they have conducted. It is in these workshops where students can observe how research is conducted and where the skills for carrying on research are developed. There will be a relatively small number of courses offered, at least in relation to number of faculty. Quantitative methods will be taught but not to the exclusion of economic theory or the application of theory to the important problems of the day.

Of course, the capabilities of students also are important. If you want to make a silk purse out of a sow's ear, it helps to start with a silk sow. But at the same time it is easy to shift too much of the explanation for differences in publication productivity of graduates to differences in their innate abilities, however measured. There may be a systematic bias whereby the best students choose the best departments. But the underlying factor still is the quality of the department--if it was not good it could not attract the best students. Also because of the relatively small and select proportion of all college graduates that undertake graduate work in economics, we would not expect to observe large differences between departments in average innate abilities of their graduates. At least, one might hypothesize that differences in acquired abilities of departmental graduates are more important than differences in innate abilities as far as explaining the difference in publication productivity.

Lastly it should be kept in mind that we have been dealing with average publication probabilities for departmental graduates. Certainly we would expect dispersion around the mean for exceptional individuals coming from any given department. Also, individuals whose work does not involve scholarly research and writing cannot be evaluated by the criterion set out in this paper.[11/] Similarly, departments not offering the Ph.D. degree are not, of course, subject to this evaluation procedure.

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Footnotes

1/ These figures are based on doctoral dissertations submitted to the University Microfilms Library Services, Ann Arbor, Michigan during the 1960-69 period.

2/ The American Journal of Agricultural Economics is not included among the list. Agricultural economists are analyzed separately in a latter table.

3/ In some cases the author had not received a Ph.D. degree. In these cases the author was identified with the department where he (or she) had received the most advanced training. Information on origin and time of training for general economists was obtained from the AEA membership Handbook (1969) and from the AFEA directory (1972) for agricultural economists. Also a number of authors were not included in the above directories. Their articles were omitted from the sample. Also articles authored by those who obtained their training in foreign institutions where omitted from the sample.

4/ A previous paper by Cleary and Edwards (1960) presents information on origin of training of authors of articles in the American Economic Review during the 1950's. In a more recent study, Lovell (1973) reports doctoral origins of 97 authors cited in the leading economics journals.

5/ Fractions occur because of multiple authors. For example, in the case of dual authorship each author is credited with one-half of an article.

6/ Since the sample becomes very "thin" for small departments, those granting less than 5 Ph.D.'s during the 1960-69 period are omitted from the rankings.

7/ A total of 91 economics departments awarded 5 or more Ph.D.'s during the 1960-69 period.

8/ Because of the relatively small number of articles involved it is risky to draw conclusions about Southern Illinois', Georgetown's, and the New School's positions in the top 15 of the Econometrica ranking at least until additional evidence is gathered for the 1970's.

9/ Exceptions include Chicago, Harvard, and Iowa State where economics and agricultural economics have been in the same department. Also many agricultural economics departments have in recent years broadened their sphere of interest beyond traditional agricultural problems.

10/ In departments offering training in the field of agriculture but awarding the Ph.D. in economics, e.g. Chicago and Iowa State, the agricultural economics graduates were identified by thesis topic.

11/ It might be argued as well that there may be a bias against the graduates of certain departments in regard to the kinds of jobs they obtain. However, the underlying reason for such a bias is likely to be quality of training.