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Salary Patterns of Agricultural Economists in the Early 1980's

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I. Introduction

Systematic explanation of wages in the service sector has typically been hampered by the absence of information on physical productivity of service workers. Frequently the analyst must rely on input information and make strong assumptions about the transformation of inputs (and cost) into outputs. To model the long-run pattern of wages in the service sector, it may be sufficient to look primarily at relative wages and long term demand factors such as income and population. A number of professions in the service sector have been successfully modeled using the familiar cobweb formulation. For example, Hansen et al (1980) report the results of estimating a multi-equation model of the long-run supply and demand for economists generally, and conclude, among other things, that the real salary of new Ph.D.'s will fall throughout this decade.

Short-run analysis of academic wages usually focuses on various sorts of earnings functions in which the natural log of earnings is regressed against a variety of human capital variables. There is an extensive literature on the determinants of general economists' salaries[1/] and on the determinants of salaries for agricultural economists.[2/] The more recent literature has emphasized the importance of using actual productivity measures, such as publications, in explaining variations in earnings along with human capital variables.

A deficiency in some of this second type of research involves the absence of a well-defined theoretical justification for particular statistical specifications, and the reliance on single equation models.

The objective of this study is to take advantage of a new, relatively underutilized data source on agricultural economists in order to examine the

general characteristics of agricultural economists, and to examine the determinants of their salaries in the early 1980's. In particular, we examine the 1981 Registry of Agricultural Economists maintained by the American Agricultural Economics Association and the Illinois Department of Labor. The Registry, when examined in conjunction with Malichar (1966) and unpublished 1976 tabulations of the Association's membership list indicate that it is broadly representative of the profession.

The plan of the paper is as follows: Section II describes the data base and provides some general characteristics of agricultural economists in the early 1980's. Section III examines salary patterns of agricultural economists in various types of employment, and focuses in more detail on the salaries of academicians, especially those who are from and at educational institutions with doctoral programs which have been ranked in terms of the quality of their faculty and in terms of the quality of their graduate programs. Special attention is paid to the salaries of female agricultural economists and differences in salaries attributable to the race/ethnicity of agricultural economists. Section IV concludes with a prospectus on outstanding research issues.

III. Characteristics of Agricultural Economists in 1981

Information on agricultural economists in this study comes primarily from the Illinois Department of Labor and the American Agricultural Economics Association which have maintained a job registry for agricultural economists since the 1974 meeting in Chicago. In 1980, the Association urged its membership, whether or not individuals were interested in looking for a new position, to complete the registry form which had been maintained by the Illinois Department of Labor for several years. The data used here refers to 1981. There are 2295 individuals in the Registry. Throughout this study we refer to "respondents", and by this mean those individuals who were on the 1981 Registry. As we shall see, the Registry appears to be a comparable source of information to earlier surveys done by NSF and the Association.

Educational institutions were the major source of employment for agricultural economists in 1981. Better than half were employed by educational institutions. (See Table 1). Also of interest is the fact that the United States Department of Agriculture employed as many agricultural economists as did the private and not-for-profit sector (excluding educational institutions). Fully 12.8% of all agricultural economists work for USDA, and another 5.0% for other Federal agencies (including the Congress). If we examine the composition of employment by sex and race/ethnicity, we find that women are represented rather evenly among educational and governmental institutions, but are somewhat less represented in the private sector. Women constitute from 7.2% to 8.5% of those sectors and 4.9% in the private sector. These differences reflect a variety of factors, of course, but they are interesting.

TABLE I

1981

DISTRIBUTION of SELECTED EMPLOYMENT GROUPS 1/ by SEX

	% of Total	%Female	%Black	%Spanish	%Asia
Educational Institutions	57.1	7.8	1.8	1.9	4.6
Fed. USDA	12.8	8.0	.3	1.4	2.8
Fed., other	5.0	7.2	.1	-	.1
State/Local	2.1	8.5	4.3	2.1	10.6
Private	12.7	4.9	3.9	2.8	1.4
Other	10.3	6.5	.9	4.8	4.4
Total	100.0	7.1	1.8	2.6	4.6

TABLE II

1981

CHARACTERISTICS OF DEGREE HOLDERS

Degree	Highest Degree of Respondent	%Female	% Black	% Spanish	%Asia
Ph.D.	61.9 %	3.8%	1.3%	2.2%	4.6 %
Ph.D. Candidate	9.3	13.5	1.9	1.9	9.6
MS	25.2	11.9	2.7	3.7	3.2
BA	2.6	14.0	3.5	-	1.8
No Degree	.1	-	50.0	5.0	-
No Response	.9	15.0	-	-	-

1/ Employment groups relate to the codes in the questionnaire as follows;
Educational:601; USDA: 602; Fed.,other:603 and 604; State,local:605;
Private:607-611; Other:606,612-616.

Source: Tabulations of 1981 Registry

While women were represented more heavily in the non-private sector, blacks were more prevalent in the private sector, and in the state and local sector viz a viz educational institutions and the Fdderal government, although there is evidence that black agricultural economists at 1890 land grant institutions were substantially under represented in the 1981 Registry. Individuals who characterized themselves as "Asian or Pacific Islander" were prominent in educational institutions (4.5%) and especially prominent in the state/local sector (10.6%).

With regard to the extent of educational attainment achieved by respondents, the overwhelming majority of them hold Ph.D's ---61.9%. Also, significant numbers (25.2%) hold masters degrees. (See Table II). With regard to the relationship between highest degree attained and sex, it is interesting to note that female Ph.D's constitute only 3.8% of all Ph.D's, while they compose 13.5% of all Ph.D. candidates. Thus, while female agricultural economists seem to be rather evenly distributed among types of employment, they tend to have not completed their Ph.D. viz a viz their male counterparts.[3/]

This preponderance of agricultural economists at educational institutions and the unusually high level of educational attainment, compared to other professions, have been characteristics of the agricultural-economics profession for a considerable period of time. (See Table III). In 1966, 58% of those who called themselves agricultural economists were at educational institutions, 54% in 1976, and 57% in 1981. With regard to educational attainment, 58.9% of agricultural economists had Ph.D.'s in 1966 compared to 63.2% in 1976, and 62.5% in 1981. The general stability of these characteristics suggests that the respondents are broadly representative of agricultural economists today.[4/]

Table III

Type of Employer and Educational Attainment of

Agricultural Economists: 1966 to 1981

Type of Employer	1981 [1/]	1976 [2/]	1966 [3/]
Educational Institution	57.1%	53.9%	58.2%
USDA	12.8	13.8	23.9
Federal, Other	5.0	7.9	
State/Local	2.1	1.4	4.0
Private	12.7	9.0	9.3
Other	10.3	14.0	1.4
Educational Attainment			
Ph.D	62.5%	63.2%	58.9%
Ph.D Candidate	9.4	NA	NA
MS	25.4	28.6	34.6
BA	2.6	8.2	6.4

Notes:

1/ From tabulations of 1981 Registry; 1996 observations which reported salaries.
2/ Unpublished tabulations of 1976 AAEA Membership file.
3/ From Malichar(1969), Table 1.

A comparison of average salaries of respondents to their counterparts in 1966 provides a number of interesting insights.[5/] (See Table IV). First, mean, annual salaries in 1981 were not appreciably higher in real dollars than in 1966 for any of the employment groups, and in fact most demonstrated considerable declines. For example, agricultural economists employed at USDA averaged $14,400 in 1966, and $36,472 in 1981; however this 153% increase was exceeded by the Consumer Price Index which increased 180% from 1966 to 1981. Second, the loss in real wages was most apparent for those with little experience and who were under age 30. For example, for those with 1 year of professional experience in 1966, the average annual salary was $9,900, while it was $16,037 in 1981-a 62% increase. Again, contrast this with inflation of 180%. Earning power was best protected by those with 15-19 years of experience or those age 45 to 54.

Equally interesting is the result that Ph.D.'s faired best in minimizing their real income loss over the period 1966-1981; their average salary increased 150%, compared to 104% for those with just a BA degree or 198% for those with a MS degree. Mean salaries for men rose 135%, and mean salaries for women rose 76%. These variations in salary are due to a number of factors; to isolate which factors are most important one must use statistical analysis such as regression analysis. Section III addresses the issue of variations in salaries ---especially those variations between men and women.

TABLE IV

Salary Characteristics of 1981 Respondents Compared to 1966 National Register Respondents

Type of Employer	1981 Mean Salary	1966[1] Mean Salary	% Change
Educational Institution	$26,246	$12,800	105%
USDA	36,472	14,400	153%
Fed/Other	35.173		
Industry	34,765	14,200	144%
Years of Professional Experience	**1981-2**	**1966**	**% Change**
1	$16,037	$ 9,900	62%
2-4	19,375	9,700	99%
5-9	27,510	11,300	143%
10-14	34,751	12,700	174%
15-19	39,682	14,100	181%
20-29	41,397	16,300	154%
30	41,877	16,200	158%
Highest Degree			
Ph.D.	$35,047	$14,000	150%
MA	22,913	11,600	98%
BA	26,260	12,900	104%
Sex			
Men	$30,671	$13,000	135%
Women	18,565	10,500	76%
Race			
White	$ 30,685	NA	NA
Black	20,151	NA	NA
Spanish	23,078	NA	NA
Asian	21,650	NA	NA
Age			
under 30	$15,406	$ 9,700	59%
30-34	22,258	10,000	123%
35-39	30,302	12,000	153%
40-44	36,366	13,700	165%
45-54	40,012	15,000	167%
55-64	41,561	16,000	160%
65 +	38,019	15,600	144%

1/ Melichar (1969), Table 1

2/ Note the Consumer Price Index rose 180% over the period 1966 to 1981.

IV. Models of Annual Salary Determination

Having identified major characteristics of agricultural economists in 1981, we now turn to a more systematic explanation of variations in their annual salaries. Two types of statistical models will be explored: a single equation model which relates experience, highest degree achieved, sex and race/ethnicity to annual salary ---a typical earnings function-- and a more complex model, estimated just for academicians, which also incorporates information on the academic quality of the degree granted and the academic quality of the employer, as well as the actual academic rank achieved by each individual.

A. Salary Functions by Major Employer Type

Table 5 reports the ordinary least squares estimates of the salary function by major employer type. Note that the employer type relates to the same categories reported earlier, although some categories such as USDA have been combined into a single Federal Government category. The model reported here is one of a variety that were experimented with. A major shortcoming in this analysis is the absence of publication activity, which is especially important for the academicians, and the absence of information on the type of work (research, administration etc.) done by the non-academicians. The former information was simply not available from the Registry as it was not on the questionnaire.

In interpreting the regression results, it should be borne in mind that the omitted categories are as follows: female=1, male=0; master degree holders are the omitted category for educational attainment; and, whites are the omitted race/ethnicity category.

Because we do not have productivity information per se, we include years of professional experience in the analysis, rather than age. Hansen, Weisbrod, and Strauss (1980) have argued that age is the appropriate regressor when explaining earnings in the presence of productivity information.

The intercept terms reflect the earlier tabular results---academicians generally have lower base salaries than do those in the Federal government, state and local government, the private sector, and other, miscellaneous and international category. Interestingly, additional professional experience in the various sectors except the private sector receive between 5 to 6% additional return for each year of experience (based on statistically significant coefficients). In the private sector, an additional year of experience obtains a much higher, 8.6%, return. Turning points for professional experience are beyond 20 years. That is, if we solve the quadratic in experience, we find that academicians obtain positive returns to experience for 30.5 years; those in the Federal government obtain positive returns for 25.8 years; those in the private sector obtain positive returns for 26.8 years, and those in the miscellaneous category receive positive returns for 32.1 years. Thus, the return to experience is initially higher in the private sector, but of shortest duration among sectors.

With regard to differences in salaries attributable to sex, we find that wome earn significantly lower salaries in educational institutions; this also held in the private sector. The first finding is at a high level of statistical significance ($\hat{t}$=6.4), the second finding is significant, but not nearly as strong ($\hat{t}$=1.9). There were no significant differences attributable

to sex in the other sectors. What this really represents for academe is something we shall return to below.

In every sector, having a Ph.D. makes a significant difference in terms of agricultural economists' salaries. The extra salary, attributable to the Ph.D., compared to having a masters degree, are greatest for those in the state/local sector, 111%, and next greatest in educational institutions, 74%. We conjecture that Ph.D. agricultural economists hold high, administrative positions in state and local government. In academe, the Ph.D. is really a passport to participate in the mainstream of activity on a university campus. Interestingly, being a doctoral candidate has no different impact on salary than does having the masters degree except in the state and local sector, where being a doctoral candidate has a surprisingly depressing effect on earnings.

Finally, with regard to race/ethnicity, we observe a number of interesting results. First, being black has no discernable effect on salary except in the state and local sector where blacks have a very much lower salary compared to whites. This is a very large effect which is worthy of further examination. Second, those agricultural economists who indicated they are Hispanic received significantly lower salaries than their white counterparts in academe. Third, Asian agricultural economists received lower salaries than their white counterparts in all sectors except the Federal sector. For blacks, the difference in the state/local sector was better than 300%; for Hispanics, the differences vary from 22% to 33%; and for Asians, the differences vary from 14% to 200%. We wish to emphasize that it is premature to draw any normative conclusions about these differences, for they may reflect possible interactions between experience and

race/ethnicity, or degree level and race/ethnicity. However, the fit obtained in each of the models is reasonably strong; between half to two-thirds of the variation in the national log of salary was explained in all but the state/local sector.

TABLE V

Annual Salary Functions[1/] by Employer Type

($\hat{t}$ in parenthesis)

Employer	Constant	EXP	EXP^2	SEX	Ph.D	CANDIDATE	BA	NONE	BLACK	SPAN	ASIA	N	R^2
Educational Institutions	9.0710	.0591 (16.2)	-.00097 (10.1)	-.3034 (6.4)	.7417 (20.8)	.0049 (.1)	.1670 (.9)	5629 (4.7)	.0136 (.1)	-.2181 (2.5)	-.3771 (6.3)	1091	.6790
Federal Gov't.	9.9410	.0501 (10.2)	-.00097 (7.0)	.0036 (.1)	.1931 (6.2)	-.0218 (.3)	-.3523 (4.9)	NA	-.1402 (.8)	-.1021 (.8)	-.0142 (.2)	378	.5236
State, Local Non-Prof.	9.3277	-.0176 (.2)	.00092 (.4)	-.1322 (1.2)	1.110 (2.2)	-1.3624 (1.8)	.4613 (.5)	.7257 (.4)	-3.3167 (3.3)	.159 (.2)	-2.075 (3.1)	46	.2128
Private	9.7899	.0858 (10.7)	-.0016 (8.8)	-.2347 (1.9)	.1334 (2.1)	.0935 (.8)	-.2878 (3.0)	.3827 (.9)	-.2691 (1.3)	-.3296 (1.9)	-.1434 (6.0)	236	.5223
International Misc.	9.7326	.0642 (5.2)	-.0010 (3. .)	.0873 (.6)	.3194 (3.4)	.1414 (.8)	NA	.1087 (2.8)	-.3424 (1.3)	.0495 (.4)	-.5722 (4.0)	106	.4854

1/ Dependent variable is natural log of salary.

B. Further Investigation of Salaries in the Educational Sector

The persistent differences in agricultural economists salary by sex, and the fact that the majority of agricultural economists are employed in educational institutions suggests that these variations be explored further. At this point, it is worthwhile to describe how one expects the remuneration process to work prior to further estimation. There would appear to be several sequential processes at work which impact on one's salary in academe at any moment in time. To begin one obtains training at a graduate institution in such areas as economic theory and statistics. The quality of this training will probably impact on one's later productivity. In an academic setting, one's research activity is probably the most important indicator of productivity, although teaching, administration, and fund-raising are also important.

Upon completing graduate school, those seeking employment in a university must compete in a fairly hierarchical market. There is generally thought to be a trickle-down process in which new Ph.D. students from the most prestigious institutions take first jobs at somewhat less prestigious institutions; those from somewhat less prestigious institutions take first jobs at less prestigious institutions and so forth. We use the notions of prestige and quality interchangeably here, aware of course that not all will agree on a particular ranking of the quality of Ph.D. programs or the quality of departments in terms of their faculty. Departments which hire junior faculty try to find the best-trained students; new Ph.D.'s by the same token try to maximize the quality of the department in their first job.

Over time, the research activity of junior faculty becomes apparent, and, periodically, review for promotion and tenure take place. We conjecture that research, teaching, public service, and fund-raising are the most important

indicators of productivity.[6/] In reviewing junior faculty at these decision points, one usually examines the time since receiving the Ph.D. or professional experience. For women, there can be important differences between the two due to child-rearing responsibilities. Below, we shall use the self-declared number of years of professional experience which should properly reflect actual experience as contrasted to years since Ph.D.

At any moment in time, presumably the most important determinants of an academician's salary are his publication activity, rank, and age. We distinguish between the impact of experience on salary and age here for the following reason. If one knows what the publication and related output activity of an individual is, then professional experience is essentially a duplicative measure, since it is usually used to reflect doing something better because one has been doing it longer. Actual output information obviates the need for experience in a regression equation, although age may be included to reflect possible "equity" considerations made when making salary decisions. That is, decision makers, especially in a university setting, may find that it is distasteful to pay younger persons more than older persons, holding everything else constant, because the older one gets, the greater one's personal responsibilities are in terms of children. In the view of some, age reflects greater "income-need."

To the extent one does not have direct productivity information, it is reasonable to presume that academic rank refects at least past productivity.

These considerations suggest that an appropriate model of the determinants of agricultural economists' (or any academic's) salary should have the following structural components: an employment equation, a productivity and/or academic

rank equation, and finally a salary equation. This takes as a given the initial qualities or endowments of starting faculty in terms of their Ph.D., ambition, and inherent intellect. The basic data reflected in the 1981 responses to the registry contains all but the degree and job quality information and all but the productivity information.

We can specify this more formally as:

$$\text{Job Quality} = f(\text{Degree Quality, Sex, Race/Ethnicity}) \quad (1)$$

$$\text{Rank} = g(\text{Degree Quality, Sex, Race/Ethnicity, Experience, Sex}\cdot\text{Experience}) \quad (2)$$

$$\text{Salary} = h(\text{Job Quality, Rank, Sex, Age, Race/Ethnicity}) \quad (3)$$

This model permits the examination of whether or not expected productivity, as measured by degree quality, impacts on academic rank, whether or not there are systematic differences in terms of job quality by sex and race/ethnicity, and whether or not more highly rated institutions actually pay higher salaries. Note also that sex has been interacted with declared years of professional experience to ascertain if there are systematic differences in the speed of promotion attributable to sex.

The operational equivalent of (1) - (3) specifies Rank as a series of multinomial logit equations[7] with full professorship the omitted category, and uses data on degree and job quality of agricultural economists' Ph.D. and faculties collected by Francis Boddy of the University of Minnesota. These data are comparable to unpublished rankings of general economics programs and departments collected by Boddy, and use the same methodology as Roose and Anderson (1969) and Carter (1966) in their earlier studies. The raw scores vary between 1.5 and 4.4.

In reviewing the data base, it became apparent that administrators received significantly higher salaries, and that the absence of a Ph.D. was often related with a nonacademic position. Accordingly, estimation of the structural model was restricted to those with Ph.D.'s amd with the academic ranks of assistant, associate, or full professor.

Table VI contains the estimation results of this model for the 244 agricultural economists for whom salary, rank, degree and job quality, sex and race/ethnicity were available. Of immediate interest is that sex and race/ethnicity do not have a statistically significant effect on the quality of academic employer. Degree quality, on the other hand, is a significant determinant, and displays the trickel-down effect hypothesized earlier. On average, agricultural economists are at schools with a 2.753 quality ranking. For every quality point one has in terms of the pedigree of one's Ph.D., one will be at a department of .275 quality ranking. The comparable figure for all economists reported by Hansen, Weisbrod, and Strauss (1978) for economists in the 1960's was .4833. Thus, agricultural economists beginning their academic careers in the 1980's will have to expect to be in departments that are significantly different than those in which they were trained. It may well be that this condition is reflective of the general market for academicians.

Also of interest is the finding that sex and race/ethnicity do not significantly affect the probability of being an associate professor compared to a full professor, or the probability of being an assistant professor compared to a full professor. Moreover, the quality of one's Ph.D., does not impact on academic rank.

On the other hand, the more experienced, and presumably the more productive, one is, the less likely one is an associate professor compared to a full professor, and the less likely one is an assistant professor compared to the odds of being a full professor. Put another way, the more experienced one is, the more likely one is a full professor compared to the odds of being an assistant professor. With regard to the relationship of experience to the odds of being an associate professor viz a viz the odds of being an assistant professor, we may obtain that result just by subtracting the coefficient of experience on the relative odds of assistant/professor from the coefficient of experience on the relative odds of associate/professor; the resulting effect is .2695 which is quite intuitive--the more experience one has, the more likely one is an associate professor compare to the odds of being an assistant professor. While experience has a statistically significant impact on rank, the interaction of sex and experience does not have a statistically significant impact on rank. This suggests that the measure of experience adequately captures actual experience for women. Note as well that race/ethnicity does not have a statistically significant impact on academic rank.

With regard to the determinants of academicians' salary, we find that academic rank is the most prominent determinant. Being a full professor viz a viz being an assistant professor entails a 40% larger salary, while being an associate professor viz a viz being an assistant professor entails a 19% larger salary. Being at a more highly ranked department has a modest impact on salary: each point of quality is associated with a 2.7% higher salary or return to quality. Sex and race/ethnicity fail to display any significant impact on salary. Also, age fails to show any significant impact on salary. Presumably, academic rank is capturing the effects of productivity and longevity on salary in academic departments.

TABLE VI

Structural Model of Academician's Salaries

(t statistic in parentheses)

$$JBQL = \underset{(11.38)}{2.753} + \underset{(2.43)}{.275\ DGQL} + \underset{(.61)}{.154\ SEX} - \underset{(-1.25)}{.625 BLACK} + \underset{(.08)}{.033\ SPAN} - \underset{(-1.57)}{1.103\ ASIA}$$

$$R^2 = .0427$$

$$\log_e \frac{P(Assoc)}{P(Prof)} = \underset{(,37)}{.2815} + \underset{(.14)}{.0567\ DGQL} + \underset{(.24)}{.3627\ SEX} - \underset{(-.28)}{.53 Black} + \underset{(.457)}{.6229\ Span.} - \underset{(-.11)}{.2701\ Asia} - \underset{(-3.9)}{.0638\ EXP} - \underset{(.02)}{.0015\ SEX \cdot EXP}$$

$$\log_e \frac{P(Assist)}{P(Prof)} = \underset{(.9)}{.8559} + \underset{(.01)}{.0054\ DGQL} + \underset{(.19)}{.313\ SEX} - \underset{(-.06)}{.1196\ BLack} + \underset{(.17)}{.277\ Span.} - \underset{(-.05)}{.2349\ Asia} - \underset{(-5.4)}{.1394\ EXP} - \underset{(-.96)}{.013\ SEX \cdot EXP}$$

$$\log_e Y = \underset{(178.21)}{10.154} + \underset{(2.09)}{.0269 JBQL} + \underset{(14.18)}{.4043\ Prof.} + \underset{(7.27)}{.1936\ Assoc.} + \underset{(.12)}{.0066\ SEX} - \underset{(-1.54)}{.0015\ AGE} - \underset{(-1.17)}{.1180\ BLACK} - \underset{(-.15)}{.01273\ SPAN} - \underset{(-.30)}{.000426\ ASIA}$$

$$R^2 = .5773$$

V. Conclusions

We have explored the characteristics and salaries of agricultural economists in the 1980's. Based on the 1981 Registry maintained by the Illinois Department of Labor and the AAEA, we find that agricultural economists continue to be predominantly Ph.D.'s, and continue to be employed at predominantly educational institutions. What evidence is available on salaries over time suggests that most agricultural economists have had considerable difficulty in keeping up with inflation in terms of their basic salary.

Relatively strong differences in salaries by sex and race/ethnicity were found among various employment types. Women in agricultural economics at educational institutions have significantly lower salaries than do men: however, a more detailed examination of salary patterns by sex for those with Ph.D.'s in departments of known quality failed to reveal such differences. In virtually all forms of employment, greater professional experience yielded significant returns in the form of higher salary--the rate of return varied from 5% to 8.6%.

There are several caveats which should be repeated viz a viz these results. First, they reflect the respondents' answers to the survey conducted by the AAEA, and while thereappears to be good correspondence between these results and those from earlier studies in terms of major characteristics, further validation of the representativeness of the respondents is called for. Second, analysis of salary variations was performed without information about actual scholarly activity, and without information on the type of work done by respondents. Our inferences about the determinants of academicians' salaries may be sensitive to the omission of actual productivity data, and further analysis along this line of enquiry would seem to be worthwhile.

NOTES

1/ See, for example, Boddy (1973),Hansen, Weisbrod, and Strauss (1978), Strauss (1971), Tolles and Melichar (1968), and Tuckman, Compinski, and Hagemann (1977), among others which have examined various aspects of the general market for economists.

2/ See, for example, Broder and Ziemer (1980), Broder and Ziemer (1982), Fuller (1971), Helmberger (1973), Lane (1981), Lee(1981), Lundeen and Clausen(1981), Melichar (1969), Peck and Babb (1976), Schotzko (1980), Schrimper (1981), Ziemer , Broder, and Spurlock (1980), and Redman (1981).

3/ See also Lee (1981) on this point.

4/ The patterns in this paper are consistent with those in Helmberger (1976), Tables 1 and 2.

5/ A comparison of median salaries in 1981 to the mean 1966 salaries in Table IV yields substantially identical results. Means for 1981 are reported for comparability purposes.

6/ See Broder and Ziemer (1982) who report the results of a number of these factors on salaries in 1979.

7/ See Theil (1969), or Schmidt and Strauss (1975) for a description of the multinomial logit model in the context of continuous right-hand side variables and multiple outcomes.

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