CHARACTERISTICS OF MINORITY MEMBERS OF THE AMERICAN ECONOMIC ASSOCIATION

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Evidence from the data tape for the 1985 Directory of the American Economic Association indicates that blacks and women remain underrepresented compared to their numbers in the general population. Although we present some limited evidence of increased representation of these minorities, the finding of underrepresentation is robust when we look at other measures of career status such as rank achieved or status of institution of employment. A fuller understanding of the determinants of minority participation within the economics profession will require that the data presented here be combined with data from other sources on productivity, salaries, and labor market alternatives.

Women and blacks historically have been underrepresented in the economics profession relative to their numbers in the general population. Why this has been so, is an important question. But it is not the question we address here. Instead, we explore a large and relatively recent source of information on economists in order to learn whether current trends continue past experience or deviate from it.

The evidence we present should be of interest to those who care about the career opportunities and career choices of minorities (which in economics includes women, ethnic minorities, and the foreign born) as well as those who are concerned with historical changes in the demographic and institutional structure of the economics profession. The evidence may also be of interest to those with particular policy objectives, e.g., that the percentage of minorities in prestigious occupations should be roughly the same as that in the population at large.

Earnings regressions have frequently been estimated for academics,

often controlling for race and sex as a way to test for labor market discrimination.[1] A few papers have focused on the salaries of economists.[2] In addition, the annual reports in the *American Economic Review* (*A.E.R.*) of the Committee on the Status of Women in the Economics Profession provide some useful data on hiring and promotion of women.

Although a few papers have looked at nonsalary aspects of the labor market experience of women and blacks,[3] almost no work has been published on the status of those of foreign birth or citizenship. The one exception is Grubel and Scott.[4]

THE DATA

The data, available on two magnetic tapes from the A.E.A., consists of information published in 1981 and 1985 as the December issues of the *A.E.R.* under the title "Biographical Listing of Members of the A.E.A."[5] In what follows, I generally refer to an edition of the Biographical Listing of Members as a Directory. Most of the analyses are performed using the 1985 Directory. The exception occurs when we compare the black economists listed in the 1981 A.E.A. Directory with the black economists listed in the *Directory of Black Economists* for 1979 (the most recent edition available as of this writing).[6] The sources of the data used by Western Publishing Co. to construct the 1985 Directory for the A.E.A. consisted of a current mailing list of members, a survey mailed to current and lapsed members, and entries from the previous (1981) Directory.

In addition to the usual biographical and career information, the data tape includes answers to questions on sex, race, country of citizenship and country of birth. Although such questions were asked on the questionnaire and the answers included on the tape, the answers were not published in either the individual biographical listings or in any separate tabulations of which I am aware. The survey questionnaire identifies the questions on sex, race, etc. as "optional statistical data" and informs the respondent that:

> With increasing frequency, the Association is asked about the numbers of economists who are members of various groups. Please help by answering the following questions. YOUR RESPONSE WILL NOT APPEAR IN THE *SURVEY*. (the capitalization is on the questionnaire)

One potential problem with using the data on minority membership is

that some members of the A.E.A. do not respond to the optional questions (presumably due to suspicion of the purposes for which the data will be used).

I classify universities that grant PhD's in economics into two groups: the top 16 are called the "elite"; all the rest are called the "rank-and-file."[7] An economist can then be classified as a member of the elite in either a broader or a narrower sense. An economist is a member of the elite in the broader sense if she (or he) received her PhD from one of the elite universities. That individual is a member of the elite in the narrower sense if she (or he) is currently a member of the faculty at an elite university.

The subfields of specialization chosen by members of minority groups may differ in systematic ways from those chosen by the white, male, native reference group. Whether they do differ can be learned from the subfield codes listed under each full entry in the Directory. The 1981 and 1985 surveys asked members to ". . . list two subfields with which you currently identify." Members were to choose two subfield codes from among a list of 49 alternatives. In earlier work with Haurin we aggregated the 48 codes into 14 combined codes. The details of the aggregation and recoding may be found in an appendix available from the author.

IS THE 1985 DIRECTORY A REPRESENTATIVE SAMPLE OF ECONOMISTS?

The issue of whether the Directory is a representative sample of economists in general, and academic economists in particular, can fully be answered only through a better understanding of why economists join the A.E.A. and why they remain or quit, over time. For the study of minorities, the isue is not just how representative the A.E.A. membership is of the whole profession. We must also wonder whether, among the members of the A.E.A., those who send in their questionnaires and answer the optional minority questions are representative of the membership as a whole. Data to answer this sort of question (a sample of economists traced through several Directories) are currently being collected in research I am undertaking with Donald Haurin.

In the meantime, we should be able to judge the representativeness of the A.E.A. Directory by comparing the characteristics of the economists in the Directory with economists in the larger population of economists as measured by the 1980 U.S. Census of Population.[8]

One important, but not surprising, finding from such a comparison is that the A.E.A. sample is not representative of the population of all econ-

omists, in the sense that nonacademic economists are underrepresented and academic economists are overrepresented. What *is* surprising is that the number of academic economists appears to be larger in the sample (7,035) than in the population (5,032). In the census, economists are classified in one of two mutually exclusive occupational categories: those who teach economics at some level above high school are classified as "economists, postsecondary" while all other economists are simply classified as "economists." One hypothesis that would explain why the A.E.A. sample of academic economists is larger than the census population of academic economists would be that respondents, in filling in responses, or census workers, in coding them, mistakenly classified as "economists" a substantial number of persons who should have been "economics teachers, postsecondary." John Priebe of the Census Bureau confirmed in a conversation (12/14/87) that some of the discrepancy might be explained in this way. He noted, for instance, that 1,233 of those who simply classify themselves as "economists," also report, in answer to a separate question, that they are employed by a university. Priebe suggests, however, that the main problem is the 425,537 persons who left their academic discipline unspecified. This means that we do not know the academic discipline of over two-thirds of the 637,149 persons who identified themselves as postsecondary teachers.

An implausible disparity between sample and population was also found by Simms and Swinton[9] when they compared their sample of blacks with data on black economists in the 1970 census. However, they also report data from a 1974 NSF survey of doctoral scientists that is closer to what we find here in the A.E.A. Directory. In particular, the NSF data reported 6,478 academic economists in 1974. With 10 years of growth, it is plausible that our figure of 7,095 is a reasonable lower bound for the number of academic economists in the U.S. in 1985. This conjecture could be given some support by counting the number of new PhD's who have entered the profession, as recorded in the useful and detailed annual (since 1967) reports of the National Academy of Sciences.[10] Unfortunately, data on those exiting the profession through death or retirement are not so readily obtained.

Even if the A.E.A. Directory is not representative of the profession as a whole in some respects, it still is an important subsample, worthy of study: presumably the members of the A.E.A. are disproportionately those who are professionally active or aspire to be professionally active.

THE 1985 DIRECTORY TAPE AS A RESOURCE FOR STUDIES ON CAREER PATHS

Since no published papers have made use of the two A.E.A. Directories currently on tape (1981 and 1985), one issue we would like to address is the likely usefulness of the data tapes as a resource for empirical studies on various topics of interest to labor economists and historians of economic thought. The individual entries in the published Directories usually contain information on previous positions held by the economists listed. The tapes would thus seem to hold the promise of providing ready access to useful data on the career paths of economists. Under this heading we include such issues as the probability, waiting time, and determinants of tenure and promotion to higher rank.

Preliminary attempts to address such issues have revealed that the tapes may not be as useful for this purpose as originally thought. Several problems should be mentioned. The most important arise from the open-ended manner in which the questions on past employment were asked on the surveys. A respondent was allowed to provide information on two positions besides the "principal present employment." These positions are identified as "other present or past employment." Under the blank line for each position are headings prompting the respondent to provide "title," "institution or firm," "location or campus," and "from-to year."

One problem is that respondents with several *current* positions could have opted to provide no information on *past* positions. Even those respondents who chose to provide information on past positions were in no way constrained to use a consistent criterion for the selection of the positions reported. Some might choose the two most *recent* previous positions. Others might choose the two most *prestigious* positions. Respondents also differed in how they interpreted what constituted a different "position." Some took the institution as definitive, so that if they had been an assistant professor and an associate professor at the same school, they would report it on the same line. Others took the rank as definitive and so would report the assistant position on one line and the associate on the other.

Even if a consistent interpretation could be assumed, the limitation to two positions, besides the current position, would of necessity result in incomplete information for those respondents who had held more than two previous positions. The problem would be more serious for older and more mobile economists. If age and mobility were independent of other

variables of interest, then the incomplete information might not be a serious problem. Unfortunately, there are plausible grounds for believing that age and mobility may be related to other variables of primary interest such as quality of training, productivity, race and sex.

Another (relatively minor) problem in the use of the 1985 tape is that when a respondent failed to provide updated information on the 1985 survey form, the information from the 1981 tape was used without any indication in the Directory or on the tape of which entries represented a 1985 response and which a 1981 response. My understanding, from conversations with Mary Winer of the A.E.A. and Jane Moore of Western Publishing Co. is that 429 records in the 1985 Directory were based solely on information from the 1981 tape.

More complete career path records could be constructed by creating a matched sample using multiple Directories over an extended period of time. One potential problem with such a technique is attrition from the A.E.A.[11] Another, of course, is the time cost of constructing such a sample.

We proceed in what follows to learn what we can from the 1985 A.E.A. Directory about the biographical and career characteristics of minority members of the A.E.A. In particular, we focus on women, blacks, the foreign born and foreign citizens, all as compared to a reference group consisting of white, male, native born, U.S. citizens. The sizes of the most important subsamples are reported in Table 1 and some sample means are reported in Table 2. One important finding apparent in Table 1 is that there are only 238 persons who identify themselves as black in the 1985 Directory. The small number of blacks precluded performing some of the originally intended analyses for them (such as an analysis of how their choice of subfields has changed over time). The reliability of the data on blacks is an important issue that we proceed to consider.

BLACKS IN THE A.E.A.: WHAT PERCENT BELONG AND IS THE SAMPLE REPRESENTATIVE?

Some economists familiar with the A.E.A. survey have suggested in casual conversation that they suspect the count for blacks is biased downward because many blacks do not respond to the question on race. I have attempted to gauge the magnitude of this problem with independent data on black economists from the National Economic Association (N.E.A.)—formerly the Caucus of Black Economists. An independent listing of black economists allows us to learn how likely black economists were to

TABLE 1
Size of Important Selected Samples from 1985 AEA Directory

Number of Persons on Tape	21314
Name and Address Only Info.	3390
Women	1919
Black	238
Foreign Born	3516
Foreign Citizen	2560
White, Male, U.S. Born, U.S. Citizen	9212
Non-PhD's*	5605
Received PhD from Elite& Univs.	4661
Received PhD from Rank-and-File& Univs.	6936

* Non-PhD's were selected in a way that included persons in the 'name and address only' category.
& For the operational definitions of "elite" and "rank-and-file" see text and note 1.

be members of the A.E.A. and, if members, how likely they were to respond to the question on race.

The N.E.A. has published four editions of its *Directory of Black Economists,* the latest in 1979. The *Directory* was intended to include all black economists in the United States, whether they belong to the N.E.A. or not. The N.E.A. used a broad definition of "economist," including anyone who had received a degree in economics or a related discipline or those who "work in jobs where they do economic or business analysis" (p. 1). I have compared the membership of the 1979 N.E.A. *Directory* with that of the 1981 A.E.A. Directory in order to better understand the decisions of blacks to: (1) join the A.E.A., and (2) identify themselves as blacks

TABLE 2
Sample Means* from 1985 AEA Directory

Year of Birth	1945.5	1944.6	1939.4	1940.7	1940.5
(11.2)	(9.9)	(11.2)	(40.1)	(12.1)	
	[1558]	[200]	[3189]	[2382]	[8556]
Year of PhD	1974.3	1975.0	1970.5	1973.0	1970.4
	(10.4)	(8.3)	(10.0)	(7.8)	(10.6)
	[1070]	[148]	[2225]	[1475]	[6636]
Potential Experience	10.7	10.0	14.5	12.0	14.6
	(10.4)	(8.3)	(10.0)	(7.8)	(10.6)
	[1069]	[148]	[2225]	[1475]	[6636]
Academic Rank&	2.5	2.6	3.2	3.0	3.2
	(1.1)	(1.2)	(1.2)	(1.3)	(0.9)
	[779]	[109]	[1986]	[1448]	[4509]
Age in 1985	39.5	40.5	45.6	43.5	44.5
	(11.2)	(9.9)	(11.2)	(9.7)	(12.1)
	[1558]	[200]	[3189]	[2381]	[8556]
Age at PhD	31.1	32.2	31.4	31.0	30.7
	(5.6)	(4.9)	(4.8)	(4.4)	(4.6)
	[892]	[124]	[2000]	[1369]	[6206]
Years from BA to PhD	9.1	8.1	8.1	7.6	8.2
	(5.2)	(3.7)	(4.0)	(3.5)	(4.2)
	[838]	[103]	[1310]	[802]	[5323]

* The top number is the mean. The second number (in parentheses) is the standard deviation. The third number [in brackets] is the number of observations for which the mean and standard deviation were calculated.

& The coding for rank was: lecturer = 0; instructor = 1; assistant professor = 2; associate professor = 3; and professor = 4. The ranking may be less appropriate for those employed in foreign university systems in which "lecturer" is a more important position than it is in the United States.

in the A.E.A. optional question on race. I made use of the 1981 A.E.A. Directory, instead of the 1985 A.E.A. Directory used in the rest of the article, in order to compare the membership in the Associations at as close to the same time as possible. In the following analysis, we assume that the N.E.A. succeeded in including only blacks in its *Directory* and that all those who identify themselves as black in the optional A.E.A. question, are in fact blacks.[12]

TABLE 3
Means* for Subsamples of Blacks from 1981 Directory Tape

	ALL	DID NOT CHECK BLACK, ON N.E.A. LIST	DID CHECK BLACK, ON N.E.A. LIST	DID CHECK BLACK, NOT ON N.E.A. LIST
Year of Birth	1939.0 (9.7) [54]	& - [1]	1935.2 (10.3) [25]	1942.2 (8.0) [28]
Year of PhD	1970.8 (8.8) [79]	1961.6 (11.2) [9]	1968.6 (8.8) [31]	1974.7 (5.8) [39]
Potential Experience	14.2 (8.8) [79]	23.4 (11.2) [9]	16.4 (8.8) [31]	10.3 (5.8) [39]
Academic Rank#	3.0 (1.0) [66]	3.7 (0.5) [7]	3.5 (0.8) [26]	2.5 (1.1) [33]
Age in 1981	46.0 (9.7) [54]	& - [1]	49.8 (10.3) [25]	42.8 (8.0) [28]
Age at PhD	32.4 (4.6) [54]	& - [1]	32.5 (4.5) [25]	32.6 (4.7) [28]
Years from BA to PhD	8.0 (3.6) [48]	8.8 (3.1) [8]	7.4 (3.7) [25]	8.7 (3.7) [15]

* The top number is the mean. The second number (in parentheses) is the standard deviation. The third number [in brackets] is the number of observations for which the mean and standard deviation were calculated.

& Since only one member of the subsample reported a year of birth, the statistic is omitted in the interests of absolute confidentiality.

The coding for rank was: lecturer = 0; instructor = 1; assistant professor = 2; associate professor = 3; and professor = 4. The ranking may be less appropriate for those employed in foreign university systems in which "lecturer" is a more important position than it is in the United States.

In the 1979 N.E.A. *Directory,* 227 persons are identified as either having received the PhD or else as having completed all degree requirements except the dissertation. Of these, 48 were members of the A.E.A. who identified themselves as black in the 1981 survey of A.E.A. members, 24 were members of the A.E.A. in 1981 who did not identify themselves as black, and 155 were not members of the A.E.A. In Table 3, we provide

some sample means for all blacks who were listed in the 1981 A.E.A. Directory as well as for subsamples based on self-identification as blacks and listing in the N.E.A. Directory. One fact worth noting from Table 3: of the 24 blacks who did not identify themselves as such, over half did not provide information on any of the other biographical or career questions either. This implies that failure to self-identify as black is more often simply failure to fill out the survey than a considered decision not to answer the race question.

Although the data are admittedly sparse, I was interested in learning (for those who answered some of the survey questions) whether the decision to check the black box on the A.E.A. survey was related to any of the other measured characteristics available from the survey. Various hypotheses are possible. For example, perhaps more successful black economists are apt to view their racial status as irrelevant to their professional lives, and hence are less likely to check the box. Another hypothesis would be that some black economists are concerned that information on race might be used by employing institutions in order to discriminate against blacks. Other hypotheses can easily be suggested.

In order to empirically address the issue, two binomial logits were estimated where the dependent variable was equal to 1 if the economist did not check the black box and equal to 0 if she did check it. The results appear in Table 4. The only variable that appears to matter is potential experience. Apparently the earlier the black economist received her (or his) PhD, the less likely she (or he) was to check the black box.

MINORITY REPRESENTATION, ACADEMIC RANK, STATUS OF EMPLOYER, AND SUBFIELD

The current status of minorities in the economics profession can be measured along more than one dimension. One is the number and percent of total new PhDs who belong to various minorities. Table 5 provides some useful information. In this table, and most subsequent tables, the reference group consists of PhD economists who are white, male, native, U.S. citizens. One dramatic feature of the data in Table 5 is how large a percent of the PhDs received their degrees in the 15 years before 1985. 61% of the reference group, and a dramatic 80% of all blacks and 78% of all women, received their PhDs in this period.

Although the numbers remain small, a modest increase in the number of blacks receiving PhDs is apparent over the 20 years from 1965 through 1985. As a percent of the reference group, blacks have also shown modest

TABLE 4
Logit Estimates of the Probability that a Black Economist Will Identify Herself (or Himself) as Black in 1981 Survey

Academic Rank[&]	0.45	--
	(0.59)	
Potential Experience	0.10	0.10
(1981 - Year of PhD)	(1.96)	(2.44)
Employment Status[+]	-0.12	0.30
	(0.17)	(0.46)
PhD from Elite Univ.	-0.23	0.28
(1=PhD from elite;	(0.24)	(0.33)
0=PhD from other)		
Constant	-4.59	-4.49
	(1.52)	(2.29)
Number of Persons	65	76
Number Who Checked Black	58	68
Number Who Did Not	7	8
-2 Log Likelihood	34.84	42.39
pseudo R^2	.22	.17

* The absolute value of asymptotic t-statistics are reported in parentheses.
On the pseudo R^2 see: George G. Judge, William E. Griffiths, R. Carter Hill and Tsoung-Chao Lee, *The Theory and Practice of Econometrics*, (New York: John Wiley, 1980), pp. 601-2.
& The coding for academic rank was: lecturer or instructor = 1; assistant professor = 2; associate professor = 3; and professor = 4.
+ The coding for employment status was: junior college or other educational institution = 1; four year college = 2; other (besides elite) university = 3; elite university = 4.

gains through the period, rising monotonically from .8% in 1960-64 to 3.9% in 1980-84.

The number of women receiving PhDs has also risen in the same period. As a percent of the reference group, women have been rising monotonically from 8.5% in 1960-64 to 29.4% in 1980-84. The foreign born and foreign citizens receiving PhDs increased in absolute numbers over most of the period, but showed no clear trend as a percent of the reference group.

Besides representation among new PhDs, another measure of the status of a minority group in the profession is the rate of advancement to higher

TABLE 5
Intertemporal Changes in Minority Representation in A.E.A. Among All PhD s

Year of Receipt of PhD	Women	Blacks	Foreign Born	Foreign Citizen	White Male, Non-For.
pre-1920	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)
1920-24	1 (0.1)	0 (0)	4 (0.2)	0 (0)	5 (0.1)
1925-29	6 (0.6)	0 (0)	10 (0.5)	0 (0)	15 (0.2)
1930-34	5 (0.5)	0 (0)	12 (0.5)	2 (0.1)	32 (0.5)
1935-39	5 (0.5)	0 (0)	12 (0.5)	3 (0.2)	57 (0.9)
1940-44	6 (0.6)	1 (0.7)	10 (0.5)	0 (0)	76 (1.2)
1945-49	20 (2.0)	2 (1.4)	25 (1.1)	9 (0.6)	115 (1.8)
1950-54	28 (2.8)	0 (0)	81 (3.7)	35 (2.4)	320 (4.9)
1955-59	19 (1.9)	8 (5.7)	123 (5.6)	44 (3.0)	368 (5.7)
1960-64	45 (4.4)	4 (2.9)	208 (9.4)	107 (7.3)	526 (8.1)
1965-69	84 (8.3)	13 (9.3)	333 (15.1)	195 (13.4)	990 (15.3)
1970-74	201 (19.8)	29 (20.7)	508 (23.0)	358 (24.6)	1463 (22.6)
1975-79	255 (25.1)	37 (26.4)	538 (24.4)	427 (29.3)	1362 (21.0)
1980-84	339 (33.4)	46 (32.9)	340 (15.4)	278 (19.1)	1152 (17.8)

* The numbers in parentheses are column percentages. The percentages in a column should add up to 100% of those in the group who both answered the employment code question and also provided a year for year-of-PhD.

TABLE 6
Academic Rank by Year-of-PhD Cohort for All Women PhDs

Year of Receipt of PhD	Lecturer	Instructor	Assistant Professor	Associate Professor	Full Professor
pre-1935	0 (0)	0 (0)	0 (0)	0 (0)	4 (100)
1935-39	0 (0)	0 (0)	0 (0)	0 (0)	1 (100)
1940-44	0 (0)	0 (0)	0 (0)	0 (0)	2 (100)
1945-49	0 (0)	0 (0)	0 (0)	0 (0)	8 (100)
1950-54	1 (6.7)	0 (0)	1 (6.7)	1 (6.7)	12 (80)
1955-59	1 (9.1)	0 (0)	0 (0)	3 (27.3)	7 (63.6)
1960-64	1 (2.9)	0 (0)	0 (0)	4 (11.8)	29 (85.3)
1965-69	1 (2.0)	0 (0)	4 (7.8)	9 (17.7)	37 (72.6)
1970-74	2 (1.8)	0 (0)	15 (13.8)	54 (49.5)	38 (34.9)
1975-79	5 (3.5)	0 (0)	62 (42.8)	64 (44.1)	14 (9.7)
1980-84	7 (3.1)	3 (1.3)	188 (83.6)	24 (10.7)	3 (1.3)

* The numbers in parentheses are row percentages. The percentages in a row should add up to 100% of those in the group who provided information on both current academic rank and on the year in which they received their PhD.

academic rank. Tables 6, 7 and 8 provide this information for women, blacks and the reference group. If we examine the members of the cohort who received their PhDs between 1970 and 1974 (and, hence, who would have between 11 and 16 years of potential experience in 1985) we find one striking difference between the women and the white, male reference group: only 35% of the women had achieved the rank of full professor, whereas 55% of the white males had achieved that rank. If we combine the two highest ranks into a category that roughly proxies "tenured status"

TABLE 7
Academic Rank by Year-of-PhD Cohort for All Black PhDs

Year of Receipt PhD	Lecturer	Instructor	Assistant Professor	Associate Professor	Full Professor
pre-1935	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
1935-39	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
1940-44	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
1945-49	0 (0)	0 (0)	0 (0)	0 (0)	1 (100)
1950-54	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
1955-59	0 (0)	0 (0)	0 (0)	0 (0)	3 (100)
1960-64	0 (0)	0 (0)	0 (0)	0 (0)	2 (100)
1965-69	0 (0)	0 (0)	0 (0)	3 (30)	7 (70)
1970-74	1 (5.9)	0 (0)	0 (0)	7 (41.2)	9 (52.9)
1975-79	1 (4)	0 (0)	7 (28)	9 (36)	8 (32)
1980-84	3 (10.3)	0 (0)	23 (79.3)	2 (6.9)	1 (3.5)

* The numbers in parentheses are row percentages. The percentages in a row should add up to 100% of those in the group who provided information on both current academic rank and on the year in which they received their PhD.

then 84% of the women in the cohort had achieved tenure while 96% of the white men had achieved tenure. As shown in Table 7, during the same period 52.9% of blacks (9) achieved the rank of full professor and 94.1% (16) achieved tenure.

A final measure of the status of minorities in the A.E.A. is provided by the status of the institution in which the economist is employed. Generally, most economists would probably agree that elite academic institutions are at the top, although there might be disagreement over some of

TABLE 8
Academic Rank by Year-of-PhD Cohort for All White, Male, Native, U.S. Citizen PhDs

Year of Receipt of PhD	Lecturer	Instructor	Assistant Professor	Associate Professor	Full Professor
pre-1935	0 (0)	0 (0)	0 (0)	0 (0)	21 (100)
1935-39	1 (4.8)	0 (0)	0 (0)	0 (0)	20 (95.2)
1940-44	0 (0)	0 (0)	0 (0)	0 (0)	37 (100)
1945-49	0 (0)	0 (0)	0 (0)	1 (1.9)	51 (98.1)
1950-54	0 (0)	0 (0)	0 (0)	6 (3.1)	188 (96.9)
1955-59	0 (0)	1 (0.4)	1 (0.4)	12 (4.7)	242 (94.5)
1960-64	4 (1.1)	0 (0)	1 (0.3)	29 (8.2)	322 (90.5)
1965-69	5 (0.8)	0 (0)	6 (0.9)	117 (18.3)	512 (80)
1970-74	6 (0.7)	1 (0.1)	30 (3.6)	341 (40.5)	464 (55.1)
1975-79	9 (1.2)	2 (0.3)	176 (22.8)	473 (61.3)	112 (14.5)
1980-84	7 (0.9)	2 (0.3)	617 (81.2)	121 (15.9)	13 (1.7)

* The numbers in parentheses are row percentages. The percentages in a row should add up to 100% of those in the group who provided information on both current academic rank and on the year in which they received their PhD.

the rest of the hierarchy. Table 9 provides employment status information for black economists.

One caveat should be emphasized for the data presented in Tables 5 through 9. Data going back to early cohorts is provided in these tables, but should be interpreted with caution, since we would expect that biases due to attrition would increase as a cohort ages. Special care should be taken in the interpretation of cohorts prior to 1945, since an economist receiv-

TABLE 9
Differences in 1985 Employment Status of Blacks by Year of Receipt of PhD

EMPLOYMENT STATUS	All	YEAR OF RECEIPT OF PHD 1940-1944	1945-49	1950-54	1955-59
Elite PhD Univ.	12	0 (0.0)	1 (50.0)	0 (0.0)	1 (12.5)
Other Univ.	66	0 (0.0)	0 (0.0)	0 (0.0)	2 (25.0)
Four-year Col.	14	0 (0.0)	0 (0.0)	0 (0.0)	1 (12.5)
Two-year Col.	0	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Other Educ.	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Fed. Gov.	12	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
State/Loc. Gov.	2	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
Bus./Ind.	6	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Banking/Fin.	6	0 (0.0)	1 (50.0)	0 (0.0)	1 (12.5)
Consulting	3	0 (0.0)	0 (0.0)	0 (0.0)	2 (25.0)
Intern. Agen. or Org.	8	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Research Inst.	5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Non-profit Org. (not educ. or research)	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Retired	1	0 (0.0)	0 (0.0)	0 (0.0)	1 (12.5)
Other Non-Acad.	0	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

* The numbers in parentheses are column percentages. The percentages in a row should add up to 100% of those in the group who both answered the employment code question and also provided a year for year-of-PhD.

ing a PhD in 1945 at an age of 25, would have been at or near retirement age in the year of the Directory (1985).

A final issue is whether minorities choose subfields that yield high returns either in psychic terms or in career terms. Space limitations do not permit detailed presentation of the evidence, but some of the salient findings can be summarized. Women disproportionately choose labor, for instance, while foreign economists disproportionately choose development and international. (The small number of blacks in the sample precluded addressing this issue for them.) Over time, labor seems

TABLE 9 (continued)
Differences in 1985 Employment Status of Blacks by Year of Receipt of PhD

EMPLOYMENT STATUS	YEAR OF RECEIPT OF PHD 1960-64	1965-69	1970-74	1975-79	1980-84
Elite PhD Univ.	0 (0.0)	2 (16.7)	1 (3.6)	3 (8.1)	4 (8.9)
Other Univ.	0 (0.0)	7 (58.3)	14 (50.0)	19 (51.4)	24 (53.3)
Four-year Col.	2 (50.0)	1 (8.3)	3 (10.7)	5 (13.5)	2 (4.4)
Two-year Col.	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Other Educ.	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.2)
Fed. Gov.	1 (25.0)	2 (16.7)	3 (10.7)	3 (8.1)	3 (6.7)
State/Loc. Gov.	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.2)
Bus./Ind.	1 (25.0)	0 (0.0)	2 (7.1)	2 (5.4)	1 (2.2)
Banking/Fin.	0 (0.0)	0 (0.0)	1 (3.6)	2 (5.4)	1 (2.2)
Consulting	0 (0.0)	0 (0.0)	1 (3.6)	0 (0.0)	0 (0.0)
Intern. Agen. or Org.	0 (0.0)	0 (0.0)	2 (7.1)	1 (2.7)	5 (11.1)
Research Inst.	0 (0.0)	0 (0.0)	1 (3.6)	2 (5.4)	2 (4.4)
Non-profit Org. (not educ. or research)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.2)
Retired	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Other Non-Acad.	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

* The numbers in parentheses are column percentages. The percentages in a row should add up to 100% of those in the group who both answered the employment code question and also provided a year for year-of-PhD.

consistently to have been an important subfield for women in all cohorts. In contrast, the percentage of both women and foreign born choosing development has dramatically declined over time, probably reflecting the general decline in the development subfield for the profession as a whole.

CONCLUSIONS AND FUTURE WORK

Although we have presented some limited evidence of increased representation of women and blacks in the economics profession, these

minorities remain underrepresented compared to their numbers in the general population. This well-known finding is corroborated when we look at other measures of career status such as rank achieved or status of institution of employment.

One interpretation of the findings is that they are solely due to current labor market discrimination. Other hypotheses have been suggested, as well. Rachel Rosenfeld, for instance, has argued that women academics are less geographically mobile than their male counterparts,[13] with adverse effects on their advancement in rank and their attainment of employment in better institutions. She suggests that in large part this is due to a greater tendency of women academics to be constrained by their spouses' career opportunities.

Harriet Zuckerman and Jonathan Cole also examined academic women (limiting their attention to scientists).[14] They found that women are just as likely as men to have studied at prestigious institutions; that their average number of employers over their career is equal to that of men; that their employment at prestigious institutions is roughly equal to men's; but that they have lower productivity in terms of quantity of articles published and are less likely to achieve high rank.

Zuckerman and Cole suggest several hypotheses for the differences in productivity. One obvious possibility is the existence of current labor market discrimination. Another is discrimination in the educational process: e.g., some have suggested that more time and effort is invested in the mathematics education of boys than of girls. Another hypothesis is that women are less integrated into the informal communications networks that are important in science. Yet another possible factor is the discouragement effect. If women expect to be subjected to labor market discrimination then their expected return on research activities would be lower than that for men and we would expect them to invest less in research activities, *ceteris paribus,* than men. The authors dismiss the argument that the time demands of children are responsible for the sex difference in productivity, on the grounds that even unmarried women and those with no children, still publish significantly fewer papers than men of the same marital and parental status. (p. 92).

Another consideration, not discussed by Zuckerman and Cole, is the return to other professions. A recent episode of the McNeil-Lehrer report focused on the declining number of black primary and secondary school teachers. The head of a prestigious black college in Ohio noted that her school was graduating fewer education majors, *not* because of discrimination in education, but because lessened discrimination in other occupa-

tions had reduced the relative attractiveness to blacks of a career in education.

The issues we have sketched are complex, but must be addressed before we can have much confidence in any concrete policy proposals. Data of the sort that we have presented in this article will be crucial for a fuller understanding of the determinants of minority participation and advancement within the economics profession. But that fuller understanding also requires that the data presented here be combined with data from other sources on productivity, salaries, and labor market alternatives.

NOTES

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1. See A.G. Holtmann and Alan E. Bayer, "Determinants of Professional Income Among Recent Recipients of Natural Science Doctorates," *The Journal of Business* 43 (October 1970): 410-418; Marianne A. Ferber, "Professors, Performance, and Rewards," *Industrial Relations* 13 (February 1974): 69-77; Emily P. Hoffman, "Faculty Salaries: Is There Discrimination by Sex, Race, and Discipline? Additional Evidence," *American Economic Review* 66 (March 1976): 196-198; Carol L. Jusenius and Richard M. Scheffler, "Earnings Differentials Among Academic Economists: Empirical Evidence on Race and Sex," *Journal of Economics and Business* 33 (Winter 1981): 88-96.

2. Francis M. Boddy, "Recent Behavior of Economists' Salaries," *American Economic Review* 61 (May 1971): 316-320.

3. John M. McDowell, "Obsolescence of Knowledge and Career Publication Profiles: Some Evidence of Difference Among Subfields in Cost of Interrupted Careers," *American Economic Review* 72 (September 1982): 753-768; Myra H. Strober and Barbara B. Reagan, "Appendix: Sex Differences in Economists' Subfields of Specialization," in Martha Blaxall and Barbara Reagan, eds. *Women and the Workplace* (Chicago: University of Chicago Press, 1976).

4. Herbert G. Grubel and Anthony D. Scott, "The Characteristics of Foreigners in the U.S. Economics Profession," *American Economic Review* 57 (March 1967): 131-145.

5. American Economic Association, "Biographical Listing of Members," *American Economic Review* 71 (December 1981) and 75 (December 1985).

6. National Economic Association, *1979 Directory of Black Economists* (published by the National Economic Association, Secretary-Treasurer, Gus T. Ridgel, Southern University).

7. In earlier related work with Donald Haurin of Ohio State, we examined changes in the distribution of elite and rank-and-file economists among the subfields of economics. We used the 1942, 1956, 1969, and 1981 Directories of the AEA to document changes in the distribution of economists among subfields. Empirically, we found that changes in the elite series led changes in the rank-and-file series. In addition, both series showed changes over time that seem broadly consistent with the casual impressions of observers of the profession. See Arthur M. Diamond, Jr. and Donald R. Haurin, "Intertemporal Changes in the Choices of Subfields by Young Economists," (Working Paper, Department of Economics, the Ohio State University, July 10, 1986). For the current study, the "elite" group includes the following sixteen schools: Harvard, Chicago, Yale, M.I.T., University of California-Berkeley, Stanford, Princeton, Michigan, Columbia, Wisconsin, Minnesota, Northwestern, Carnegie Tech (a.k.a. Carnegie Mellon), Pennsylvania, Johns Hopkins, and U.C.L.A. The current definition of "elite" is broader than in the earlier work with Haurin (1986) where a longer time-frame necessitated a narrower definition (viz., Harvard, Chicago, and Yale). In order to identify the elite, I consulted the following rankings of PhD programs: Hayward Keniston, *Graduate Study and Research in the Arts and Sciences at the University of Pennsylvania* (Philadelphia: University of Pennsylvania Press, 1959) which included a 1924 rating; Allan M. Cartter, *An Assessment of Quality in Graduate Education* (Washington, D.C.: American Council on Education, 1966); Kenneth D. Roose and Charles J. Andersen, *A Rating of Graduate Programs* (Washington, D.C.: American Council on Education, 1970); *The Chronicle of Higher Education,* "How Professors Rated Faculties in 19 Subfields, (January 15, 1979) p. 6; and an unpublished survey by F.M. Boddy of the University of Minnesota, 1981. All rankings are based on survey results.

8. Bureau of the Census, *Detailed Occupation and Years of School Completed by Age, for the Civilian Labor Force by Sex, Race and Spanish Origin: 1980,* Supplementary Report of the 1980 Census of the Population (PC80-S1-8), (Washington, D.C.: U.S. Government Printing Office, 1983).

9. Margaret C. Simms and David H. Swinton, "A Report on the Supply of Black Economists," *The Review of Black Political Economy* 11 (Winter 1981): 181-202.

10. National Academy of Sciences, *Summary Report 1985—Doctorate Recipients From United States Universities* (Washington, D.C.: National Academy Press, 1986). The 1985 report was the 19th annual report in the series.

11. In earlier work with Haurin, a preliminary test indicated that we could not reliably use solely the 1981 survey to obtain data on subfield choices for the 1940s and 1950s. The problems resulted from nonrandom attrition and individuals changing subfields over long time periods.

12. The assumption that all racial responses are accurate may not be innocuous. Brief, casual examination of a partial dump of the data, for instance, revealed an economist with a Jewish-sounding last name who described his race as Mongolian.

13. Rachel A. Rosenfeld, "Academic Men and Women's Career Mobility," *Social Science Research* 10 (December 1981): 348.

14. Harriett Zuckerman and Jonathan R. Cole, "Women in American Science," *Minerva* 13, 1 (Spring 1975): 82-102.