

**EMPLOYMENT CHOICE AND ECONOMICS FACULTY
RESEARCH AT BLACK COLLEGES: A SAMPLE SELECTION
APPROACH**

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Current Version: October, 2000

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Abstract

This paper examines the research productivity of individual economists at Historically Black Colleges and Universities (HBCUs) and Historically White Colleges and Universities (non-HBCUs) that are teaching institutions. We estimate a sample selection model where it is hypothesized that individual Ph.D. economists seeking academic employment sort themselves into institutions (HBCU or non-HBCU) according to their preferences for teaching relative to research. Our findings suggest that such a sorting mechanism is occurring. These findings support the notion that research-oriented teaching economists positively select to non-HBCU employment, and this partially explains the research gap that exists between economics faculty at HBCU and non-HBCU teaching institutions.

JEL Classification: A2, I2, J2, J4

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I. Introduction

Teaching institutions have a legacy that values teaching. In spite of this, economists at these institutions are engaged in scholarly work. Indeed, recent evidence indicates that economists at liberal arts schools (Bodenhorn, 1997; Hartley and Robinson, 1997) and Historically Black Colleges and Universities (HBCUs) (Agesa, Granger and Price, 2000) have produced a non-trivial amount of scholarly output.¹ HBCUs are a unique component of teaching institutions because of their commitment and resulting success in educating students whose likelihood of completion would be dramatically less had they attended a non-Historically Black College and University (non-HBCU).² Recent evidence indicates, however, that economics departments at HBCUs produce significantly less research output relative to economics departments at non-HBCUs (Agesa, Granger and Price, 2000). Moreover, because research output is aggregated to the department level in previous work, this finding does not necessarily indicate a difference in research output of individual economists at HBCUs relative to their peers at non-HBCU teaching institutions.

This study utilizes individual data on economists at HBCUs and non-HBCUs to examine the determinants of research output and employment of economics professors at the two types of institutions. This paper is important for a number of reasons. First, the use of individual data in the measurement of the difference in research output between economists at HBCUs and non-HBCUs facilitates controlling for personal and institutional characteristics that may partially explain differences in research output. This is important because previous work (aggregated by department) could mask the effects of factors such as economists' rank, years of experience and quality of Ph.D., on individual research output. Second, the use of micro-data also facilitates controlling for selectivity that may occur in the employment process. Indeed, economists with considerable teaching aspirations may self-select to teach students whose returns to education

¹ See Agesa, Granger, Price (2000) for a brief history of HBCUs.

² Enrollment data reported by the National Center for Education Statistics (located at *WEBCASPAR* on the Internet at <http://caspar.nsf.gov>) reveal that in 1995, only 19 percent of all black college undergraduates were enrolled at HBCUs, yet HBCUs were responsible for 33 percent of all baccalaureate degrees awarded to black Americans.

(Constantine, 1995) and odds to completion are greatly enhanced by an HBCU education. Further, if the process of taking a job at a non-HBCU versus a HBCU is one of self-selection, the results reported would reveal the extent to which this selection mechanism affects individual economics faculty's publication rates at the two types of institutions. Moreover, the use of the selection technique is novel in the estimation of the determinants of research output and employment of professors at different types of academic institutions.

Finally, if this study reveals that research-oriented economists (at teaching institutions) gravitate toward non-HBCUs, then this may help explain why the supply of Black Ph.D. economists is difficult to increase. Several recent studies reveal that there is a positive correlation between the research output of economics faculty at teaching institutions and the number of economics Ph.D.s produced by the institution (Hartley and Robinson, 1997; Agesa, Granger, Price; 1998; 2000). It is conceivable that interactions occurring between students and professors in more productive environments increase the likelihood that students will pursue doctoral studies. Given that HBCUs graduate approximately one-third of Black undergraduates, increasing the productivity of their faculties could subsequently increase the supply of Black Ph.D. economist.

Our findings suggest that between 1973 and 1997, research output of individual economists at HBCUs is significantly less than research output at non-HBCUs. However, the magnitude of this gap falls by 16 percent if we control for the realization that research-oriented economists (at teaching institutions) gravitate toward non-HBCUs. This suggests that previous findings of the difference in research output of HBCU and non-HBCU economics departments may have overstated the difference in research output of individual economists at the two types of institutions. Further, our results suggest that there are unobservable individual faculty characteristics that influence the choice of HBCU employment that have measurable effects on research productivity. One possible interpretation of this finding is that individuals who possess teaching aspirations that outweigh research aspirations self-select to HBCU employment. Moreover, this selection mechanism partially explains a non-trivial portion of the difference in research output for economist at HBCU and non-HBCU.

In the next two sections of the paper the data and research output measures are discussed. Next building upon the assumption that there exist some unobservable characteristic that affects an individual's employment choice (between a HBCU and non-HBCU) and research productivity, individual research output equations are derived. We address this by specifying sample selection model. The results are provided and discussed in section IV. The last section concludes.

II. Data

The sample for this study includes individual observations drawn from 140 non-research colleges and universities. The *1996 Prentice Hall Guide to Economics Faculty* (Hasselback, 1996) was used as a basis for selecting the sample. From the *Prentice Hall Guide*, 39 HBCUs and a random sample of 101 non-HBCUs were chosen.³ This sample yielded 167 and 449 economists from HBCUs and non-HBCUs respectively. Appendix A contains a complete listing of the institutions from which data on individual economics faculty was compiled. We restrict our analysis to economists employed at non-research colleges and universities simply because the majority of HBCUs have Carnegie classifications of Masters (Comprehensive) Colleges and Universities I or below. Moreover, because the purpose of this analysis is to distinguish if research output of individual economists at HBCUs differ from their peers at non-HBCUs, the inclusion of economists from Doctoral or Research institutions would overstate the research gap.

The *Prentice Hall Guide* provides economists' name, academic rank, year of graduation, and Ph.D. granting institution.⁴ The name of economist, as listed in The Prentice Hall Guide was used to reference the number of publications produced. The measure of research output for individual economists is based on the number of articles and notes (PUBS) produced by an economics faculty member between 1983 and 1997 that are indexed in the EconLit database. Institutional variables used to explain

³ Economists from Howard University (an HBCU) were not included in this study because Howard has Carnegie classification as a Research I Institution. Also, each non-HBCU listed in the Prentice Hall Guide with a Carnegie classification of Baccalaureate of Masters level was assigned a unique number, and the random number generator from the SAS statistical package was used to generate a sample of 101 non-HBCUs.

differences between individual economist's research output includes; the number of library volumes it has, its Carnegie classification, its student quality (measured by an index), and its public or private status (represented by a dummy variable). A complete listing of individual and institutional variables and their definitions are included in Table-1.

A shortcoming of using *The Prentice Hall Guide* as a source of the individual attributes of economists is that it does not include information on the race and gender of economists. Such an omission is important, given recent evidence that publication rates may differ by race (Creamer, 1998) and gender. Despite this, measuring the difference in research output of economists at HBCUs and non-HBCUs while controlling for possible sorting that occurs amongst economist when choosing an institution, provides an important insight into the influence of omitted factors on research productivity and research discrepancy between these institutions.

III. Methodology

To examine the determinants of research output for individual economics faculty at HBCU and non-HBCU teaching institutions, we utilize a specification that allows the measurement of the difference in research output for individual economics faculty at the two types of institution; specifically:

$$\ln(pub_i) = a + b(Y) + c(HBCU) + e_i \quad (1)$$

where $\ln(pub_i)$ is the natural log of the number of JEL indexed publications for the i^{th} individual.⁵ Y is a vector of individual attributes specific to the i^{th} economists. The vector is comprised of institutional characteristics that may influence one's research output. The coefficient " b " captures the impact of these institutional attributes on the i^{th} person's research output. The variable $HBCU=1$ if the i^{th} economist is employed at an

⁴ Economists without Ph.D.s were eliminated from this analysis, since these individuals are far less likely to have research output.

⁵A value of .001 was used for individual faculty members with zero research output, so as to enable a log transformation.

HBCU teaching institution, $HBCU=0$ if otherwise. The coefficient on HBCU, “c” captures the difference in research output for individual economists at HBCU and non-HBCU institutions.

There are two shortcomings in using the above specification to measure the difference in research output of individual economics faculty at HBCU and non-HBCU teaching institutions. First, a single equation approach constrains the structure of research output to be the same at the two types of institutions. Past research finds that economics departments at HBCUs produce less research output than those at non-HBCUs (Agesa, Granger, Price, 1999). Such findings may be the result of a different research structure for individuals at these two types of institutions. A second shortcoming is that if potential candidates in the labor market for economists have the perception that research output of economists at HBCUs is less than their counterparts at non-HBCUs, then individuals whose teaching aspirations outweigh their research aspirations may self-select to HBCU employment. Moreover, if either of these shortcomings hold true, then equation (1) will yield biased estimates of the difference in research output of economists at HBCU and non-HBCU institutions. To remedy this, we consider a model that incorporates the possibility that individual economists, given their research/teaching expectations, select into an institution (HBCU or non-HBCU) in which they perceive to match their ex ante research/teaching expectations.

Individual I , who is pursuing employment at a teaching institution, makes the binary choice of whether or not to teach at an HBCU. We hypothesize that individuals make this decision by weighing their teaching and research aspirations; as such, this decision is a reflection of an underlying regression. We model the difference between an individual's teaching and research aspirations as an unobserved variable, $teach_i - research_i = y_i^*$, such that:

$$y_i^* = b(X) + u \quad (2)$$

where u has a standard normal distribution and X is a vector of individual and institutional characteristics that explain an individual's decision to work at an HBCU.

We cannot observe an individual's teaching and research aspirations, however, we do observe their decision to teach at an HBCU or not. Specifically, if

$$teach_i - research_i = y_i^* > k \quad \text{then} \quad HBCU = 1 \quad (3)$$

Here “ k ” is a threshold where teaching aspirations must outweigh research aspirations in

$$teach_i - research_i = y_i^* \leq k \quad \text{then} \quad HBCU = 0 \quad (4)$$

order for an individual to decide to work at an HBCU.

The probability that an individual is employed at an HBCU can be expressed in terms of the latent variable regression, namely:

$$P(HBCU = 1) = P(y_i^* > k) = P(bX + u > k) = F(bX) \quad (5)$$

Where F is the cumulative distribution function of the normally distributed error term u . This equation estimates the determinants of HBCU employment for economists who have chosen to teach at teaching institutions.

Recall we assumed that unobservable characteristic affects an individual’s employment choice and research productivity. Given this, estimation of equation (1) would yield biased results, attributable to omitted variable problems. To correct for this problem we employ sample selection approach (Heckman, 1979). This procedure treats the bias as an omitted variable problem. In the first stage, we estimate equation (5), which generates selection statistics S_i for each type of institution.⁶ In the second stage, the selection statistics are included as regressors in the equations used to estimate research productivity for economists at each type of institution. Specifically,

$$\ln(pub_i | HBCU = 1) = \ln(pub_{1,i}) = b_1 Y_1 + c_1 S_{1,i} + e_{1,i} \quad (6)$$

$$\ln(pub_i | HBCU = 0) = \ln(pub_{0,i}) = b_0 Y_0 + c_0 S_{0,i} + e_{0,i} \quad (7)$$

where $\ln(pub_{1,i})$ and $\ln(pub_{0,i})$ are the publications for HBCU and non-HBCU economists respectively. As noted above Y contains individual attributes specific to the i^{th} economists. S_i are the selection variables, their coefficients, c , captures the effect of omitted variables which explain the selection to HBCU employment on research output

⁶ These results are products of the inverse of Mill’s ratio (see Heckman, 1979).

of economists at HBCUs (equation 6) and non-HBCUs (equation 7).⁷ To ensure identification of our research output equations it is necessary that the HBCU employment status equation contain exogenous variables that affect the HBCU employment decision but do not effect research output. For this reason, the Vector X (in equation 5) contains controls for faculty fringe benefits, a regional dummy and the number of computers on campus. Additionally, the HBCU employment equation omits the dummies for faculty rank.

It is also possible to measure the resulting research gap between economists at HBCU and non-HBCU institutions, subtracting the portion of the gap that can be attributed to selection. A procedure is employed that is often used for the decomposition of earnings gaps of two groups, where earnings of each group is measured using selectivity corrected regressions (Reimers, 1983). However, because the research structure at HBCUs and non-HBCUs may be different, our purpose is not to decompose the research gap, but to remove the portion of the gap that can be attributed to selection. Rearranging equation (6) and (7) and then subtracting equation (6) from (7), the selectivity corrected research gap between economists at non-HBCUs and HBCUs (*RGAP*) can found. *RGAP* can be written as follows:

$$RGAP = \ln(pub_{1,i}) - \ln(pub_{0,i}) - c_0(S_{0,i} - S_{1,i}) = b_0Y_0 - b_1Y \quad (8)$$

In the selectivity corrected research gap (*RGAP*) outlined above, economists at non-HBCUs are the reference group (as indicated by the use of the coefficient on the non-HBCU selection term, c_0).

⁷ More explicitly, using Heckman's (1979) interpretation of c . It captures the covariance between the error term in the HBCU status equation, μ , and the error term in the research output equation.

IV. Results

Table-1 reports the mean and standard deviation of the variables constructed to estimate the research output equations. The definition of the variables is contained in Table-2. Some noteworthy differences exist between individual economics faculty members in the HBCUs and non-HBCUs. First, on average an individual economist is approximately 3 ½ times more likely to publish at a non-HBCUs than HBCUs. Second, salary (SALARY) of the typical economist at a non-HBCU exceeds that of their counterpart at HBCUs by approximately six thousand dollars. Finally, relative to economics faculty at HBCUs, an economics faculty at non-HBCUs is approximately two times more likely to be housed in economics only disciplinary units (ECON-ONLY).

Table-3 reports the results of our regressions. Column 1 reports the results of the pooled specification of research output of economists at HBCU and non-HBCU teaching institutions (equation 1). The coefficients display the expected sign. Each year of experience significantly increases JEL indexed publications by 9.67 percentage points.⁸ Full professors significantly produce 138.58 percentage points more articles relative to assistants (assistant professors are the base group), while associate professors produce 63 percentage points more. Bodenhorn (1997) suggests that the presence of other productive scholars significantly increases the productivity of any one scholar. In this light, we examine the synergy effect of other productive economist on any one economist. The coefficient on the SCHOLAR variable was positive and significant coefficient. This indicates that increasing the percent of faculty engaged in research at teaching institutions by 1 percentage point will increase research output of an economist by 13.5 percentage points. Also, increasing library volumes at teaching institutions by 1 percentage point increase research output by 1.9 percentage points. The central finding for this specification is the coefficient on HBCU. Economists at HBCUs significantly produce 60 percentage points less JEL indexed publications relative to their peers at non-HBCUs.

Next, we estimate research output separately for economists at HBCU and non-HBCU institutions while controlling for selectivity in the employment process. The

estimates for research output are reported in columns 2 and 3 of Table-3, and the determinants of HBCU employment are reported in column 4. Columns 2 and 3 indicate that the structure of research output of economists at the two types of institutions are quite different. Indeed, the experience-research profile of non-HBCUs is concave, while this is not the case for HBCUs. This is indicated by the negative and insignificant coefficients on both *EXP* and *EXP2* in the HBCU equation in column 3, while *EXP* is positive and significant and its square is negative, small and significant in the non-HBCU equation. This suggests that each additional year of experience significantly increases research output of economists at non-HBCUs by 15.69 percentage points. The research output of non-HBCU economists significantly decreases by .59 percentage points per year in the latter stages of an economist's career. However, after accounting for years of experience, full and associate professors at non-HBCU institutions have research output that is insignificantly different relative to assistant professors at non-HBCUs. On the other hand, full and associate professors at HBCUs significantly produce respectively, 519.84 and 140.80 percentage points more JEL indexed articles relative to assistant professors at non-HBCUs. These findings suggest that Ph.D. economists at non-HBCUs produce a steady stream of articles throughout their careers, regardless of their rank, while rank plays a primary role in determining the research output of Ph.D. economists at HBCUs, regardless of years of experience.

The SCHOLAR variable suggest that synergy exist between departmental output and individual effort. Recall SCHOLAR measures the percent of faculty that are publishing (PFP) in a department. Apparently, being around other publishing Economists increases the likelihood that an associated colleague will publish. For example, increasing the PFP in a HBCU economics department by 1 percentage point would contribute to a 11.38 percentage point increase in the publication of other economist in that department. Likewise, increasing the PFP in a non-HBCU economics department by 1 percentage point generates a 15.32 percentage point increase in the publication of other economist in that department (Table-3 Column-2).

⁸ The marginal impact of a variable on research output is computed by taking the exponential of the estimated coefficient minus one and multiplying by 100.

The coefficient on the selection term is positive, small and insignificant in the HBCU equation, while it is large, positive, and significant in the non-HBCU equation. This suggests that omitted variables that increase the likelihood that an economist is employed at an HBCU have no significant effect on research output of economists at HBCUs, while these omitted factors significantly increase research output of economists at non-HBCUs by 166 percentage points. This finding supports the notion that economists at teaching institutions with considerable research aspirations positively select to non-HBCU employment.

Using equation (8) we estimate the resulting research gap between economists at non-HBCU and HBCU institutions. This procedure allows for different research structure for economists at the two types of institutions, and it also removes the portion of the gap that can be attributed to selection. The total gap in research output between economists at HBCUs and non-HBCUs is 289 percentage points. The portion of the gap due to selection is 46.96 percentage points. This suggests that 16.22 percent of the gap can be attributed to the selection to HBCU and non-HBCU employment. Given omitted factors which influence the selection to HBCU employment have a positive and significant impact on research output of economists at non-HBCUs, we argue that economists with teaching aspirations that outweigh research aspirations self-select to HBCU employment. For individual economics faculty that are employed at HBCUs, this seems plausible, if as argued almost thirty years ago with respect to economics instruction at HBCUs that “more effort is probably put into the teaching of economics in HBCUs than appears to be true of the larger institutions” (Lloyd, 1971 p. 253).⁹

For completeness the determinants of HBCU employment of economists is also reported (column 4). Having a lower salary (*SALARY*) increase the likelihood that an economist employed at a teaching institution works at an HBCU. If an economists' home institution is not located in the northeast (*REGION*) or if a small percentage of an economists' co-workers are engaged in scholarship (*SCHOLAR*) the economist is

⁹There is some empirical support for the idea that faculty at HBCUs are committed to the teaching missions of HBCUs. Allen (1991) reports survey results indicating that 52 percent of HBCU faculty were influenced to accept an appointment at an HBCU as a result of a strong desire to teach at an HBCU.

significantly more likely to be employed at an HBCU. Fewer computers on campus (*NCOM*), lower fringe benefits (*FRINGE*) or an increased probability that an economists' department is multi-disciplinary (*ECON-ONLY*) significantly increases the likelihood of HBCU employment. However, economists employed at teaching institutions that have Carnegie classification of Masters (*MA*) or if the institution has more library volumes (*LIBVOL*), are significantly more likely to be employed at an HBCU. Other determinants of HBCU employment include significantly lower student quality (*SQUAL*) and decreased likelihood that the employing institution is private (*PRIVATE*). It is interesting to note that the coefficient on the quality ranking of an economist's Ph.D. (*SCHOOL RANK*) is very small and insignificant in determining HBCU employment. If we assume that the quality of an economist's degree partially measures his ability to perform research. Then the insignificance of the quality of the degree in determining HBCU employment suggests that the choice of HBCU employment is not hinged on the ability to do research (or the lack of ability). This finding also suggests that it is possibly the weighing of teaching and research aspirations motivates the decision for HBCU employment, and not teaching and research abilities.

In general, the estimates from the selection model suggest that research productivity of individual faculty members appears to be sensitive to institutional type. This was also observed previously when analyzing the differences in research productivity of economics faculty at the two types of institutions at the aggregate departmental level (Agesa, Granger, and Price 1999). Controlling for personal and institutional variables (at the individual level of economics faculty output) and correcting for self-selection only partially explains the research gap between HBCUs and non-HBCUs. Discovering what is contributing to this gap await future research.

V. Conclusions

In this paper we examined the research productivity of individual economics faculty at HBCU and non-HBCU teaching institutions. Our findings suggest that there is positive selection to non-HBCU employment. Moreover, this selection mechanism

explains a measurable portion of the research gap between HBCU and non-HBCU economists. Our maintained hypothesis is that the HBCU/non-HBCU research gap is engendered partially by a self-selection process in which individuals match their strong preferences for teaching with institutions that presumably value such a preference. We estimated a sample selection model based on an economists' binary choice of HBCU or non-HBCU employment. Estimates from the selection model suggest that research-oriented teaching economists select into non-HBCUs, and this partially explains the research gap between economics faculty at HBCUs and non-HBCUs. As for the factors that explain the resulting research gap after allowing for selection, we can only conjecture, like Hudgins (1994), relative to economics faculty at non-HBCUs, HBCU economics faculty perhaps have limited technical support, and inadequate infrastructure necessary for producing economics research.

The results reported here also have implications for the teaching missions of HBCUs and the supply of black Ph.D. economists. Given that research-oriented economists appear to select toward non-HBCUs, a plausible consequence is that this selection inhibits the supply of black Ph.D. economists. Increasing the number of researchers at HBCUs would improve the academic units' teaching effectiveness. This in turn would have a positive impact on the number of an institution's baccalaureate graduates that go on to earn doctorates in economics (Agesa, Granger, and Price 2000). Given the large proportion of Black students that attend HBCUs, changing the old pattern and/or addressing underlies factors which contribute to the research gap would enhance the teaching missions of these institutions and effect an increase in the supply of black Ph.D. economists.

There are some limitations of our analysis that requires caution in interpretation. First, we have hypothesized that selection into HBCUs is governed by the preferences of Ph.D. economists for teaching (and mentoring) over research. Moreover, if blacks or females are predisposed to HBCU employment for unobserved reasons or have greater teaching aspirations relative to research the omission of gender and/or the racial status may be driving our results that "selection partially explains research output". However, the use of the selection technique in determining research output minimizes the bias that

may results from the omission of these variables. Additionally, this analysis provides an empirical framework for evaluating research output of academicians at different types of institutions. Moreover, an analysis which includes racial and gender status as well as controls for teaching load and number of office hours would be a natural extension of this work.

Another limitation of this, and most analyses of the determinants of employment, is the inability to distinguish the portion of employment outcomes (in this case, HBCU vs. non-HBCU), that is a result of labor supply versus labor demand decisions. This is of particular consequence in light of our last disclosure that the selection of blacks and/or women to HBCU employment may be driving our results. Thus, it is possible that our results are capturing employment outcomes (and their resulting research output outcomes) that is not a result of self-selection, but discriminatory hiring practices of economics departments. Moreover, given recent evidence suggesting that discrimination occurs in the market for female economics faculty positions (Kolpin and Singell, 1996), it could be the case that black Ph.D. economists face similar discrimination.¹⁰

¹⁰Discrimination against black economists seeking employment in research institutions seems a plausible hypothesis given the low numbers of black Ph.D. economists among the faculty ranks at research institutions. The Journal of Blacks in Higher Education (1994) reported that as of 1994, there were only 11 black faculty members in the economics departments of the 25 top-rated universities.

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Table 1**MEAN AND STANDARD DEVIATION OF VARIABLES**

Variable	Entire Sample	Non-HBCUs	HBCUs
pub	1.57 (3.02)	1.95 (3.37)	.551 (1.31)
EXP	16.51 (8.74)	16.73 (8.85)	15.91 (8.43)
FULL	.386 (.487)	.405 (.491)	.353 (.473)
ASSOC	.352 (.478)	.351 (.491)	.353 (.479)
SCHOOL RANK	57.54 (34.05)	54.15 (34.06)	66.64 (32.38)
SALARY	46880 (8290)	48590 (8430)	42310 (5810)
SCHOLAR	.360 (.294)	.417 (.180)	.208
LIBVOL	393 (233)	405 (236)	362 (224)
SQUAL	2.89 (.892)	3.14 (.824)	2.21 (.693)
MA	.591 (.492)	.503 (.500)	.826 (.379)
ECON-ONLY	.509 (.500)	.604 (.489)	.257 (.439)
PRIVATE	.506 (.500)	.617 (.486)	.209 (.408)
REGION	274 (.446)	.367 (.483)	.024 (.153)
FRINGE	2378 (1759)	2442 (1890)	2205 (1335)
NCOMS	345.9 (413.2)	374.0 (452.4)	270.2 (268.9)
Sample Size	616	449	167

*Note: Standard Deviation are in parentheses.

Table 2**VARIABLE DEFINITIONS:**

pub: Total number of articles and notes published by an individual faculty member between 1983 and 1987 that are listed in EconLit database (includes all journals indexed in the Journal of Economic Literature).

EXP: Experience equals the difference between 1997 and the year ones doctorate was earned. *SOURCE*: *The 1996 Prentice Hall Faculty Guide* or from Online Computer Library Center's (OCLC) Dissertation Abstract Online (<http://firstsearch.oclc.org>).

FULL: Dummy variable that equals 1 if academic rank is Full Professor, 0 otherwise. *SOURCE*: *The 1996 Prentice Hall Guide To Faculty*.

ASSOC: Dummy variable that equals 1 if academic rank is Associate Professor, 0 otherwise. *SOURCE*: *The 1996 Prentice Hall Guide To Faculty*.

SCHRK : Rank of graduate program from which doctorate was earned (school rank). The ranking is base on the National Research Council's ranking of Ph.D. granting economics departments in 1995. The ranking ranged from 1.5 (two programs tied for first place) to 107 the lowest rank. All graduate programs not ranked were assigned a value of 107. *SOURCE*: *Research-Doctorate Programs in the United States: Continuity and Change*, National Academy Press, Washington DC, 1995.

SALARY: Average salary at a faculty member's institution in 1996. *SOURCE*: IPEDS Financial Data, National Science Foundation (WEBCASPAR (<http://caspar.nsf.gov>)).

SCHOLAR: Percent of the faculty members in a given economics department that have published articles abstracted in the Journal of Economic Literature over the 1983 - 1997 period.

LIBVOL: Number of volumes held in the library of the institution at which an individual faculty member is employed. *SOURCE*: *Peterson's Guide To Four Year Colleges 1998*, 28th edition.

SQUAL: Student quality index based on Peterson's ordinal ranking of a college's admissions criteria (Most Difficult = 5, Very Difficult = 4, Moderately Difficult = 3, Minimally Difficult = 2, and Noncompetitive = 1). *SOURCE*: *Peterson's Guide To Four Year Colleges 1998*, 28th edition.

MA: Dummy variable that equals 1 if an institution offers Masters degrees. *SOURCE*: *The Carnegie Classification of a college/university* (<http://www.carnegiefoundation.org/>).

Table 3 continued**VARIABLE DEFINITIONS:**

ECON-ONLY: Dummy variable that equals 1 if the faculty member's disciplinary unit is Economics only. *SOURCE*: The 1996 Prentice Hall Guide To Faculty (basis on the name of the department as reported in guide).

PRIVATE: Dummy variable that equals 1 for private college/university. *SOURCE*: Peterson's Guide To Four Year Colleges 1998, 28th edition.

HBCU: Dummy variable that equals 1 if a faculty member is employed at is a Historically Black College/University.

REGION is a dummy variable that equals 1 if the institution is located in the Northeastern United States.

FRINGE is the average fringe benefits, per faculty member in 1997, at the institution at which an individual faculty member is employed. *SOURCE*: IPEDS Financial Data (WEBCASPAR).

NCOMS is the number of computers on the campus of which an individual faculty member is employed. *SOURCE*: Peterson's Guide To Four Year Colleges 1998, 28th edition.

Table 4

ESTIMATES OF RESEARCH OUTPUT AND HBCU EMPLOYMENT

	Research Output		HBCU Employment	
	(1)	Pooled (2)	HBCU (3)	non-HBCU (4)
<i>CONSTANT</i>	-3.583*** (.89)	.333 (1.713)	-2.588* (1.349)	1.912*** (.637)
<i>EXP</i>	.092* (.051)	-.067 (.088)	.146** (.062)	-.009 (.008)
<i>EXP2</i>	-.005*** (.001)	-.001 (.002)	-.006*** (.001)	---
<i>FULL</i>	.869** (.375)	1.824*** (.526)	.520 (.475)	---
<i>ASSOC</i>	.489 (.307)	.879*** (.444)	.343 (.383)	---
<i>SCHOOL RANK</i>	-.003 (.003)	-.007 (.005)	-.001 (.004)	-.0002 (.002)
<i>SALARY</i>	.004 (.017)	-.073* (.041)	-.014 (.023)	-.003** (.014)
<i>SCHOLAR</i>	.126*** (.017)	.108*** (-.032)	.142*** (.021)	-.034*** (.011)
<i>LIBVOL</i>	.126*** (.005)	.011 (.009)	.029*** (.007)	.014*** (.005)
<i>SQUAL</i>	.245 (.175)	.091 (.351)	.045 (.230)	-.380*** (.160)
<i>ECON-ONLY</i>	-.028 (.237)	.207 (.462)	-.332 (.329)	-.474*** (.168)
<i>MA</i>	.221 (.255)	.025 (.620)	.417 (.302)	.707*** (.191)
<i>PRIVATE</i>	.087 (.286)	-1.811*** (.671)	.283 (.363)	-.609*** (.200)
<i>HBCU</i>	-.918*** (.262)	---	---	---
<i>REGION</i>	---	---	---	-1.41*** (.313)
<i>FRINGE</i>	---	---	---	-.000009* (.000005)
<i>NCOMS</i>	---	---	---	-.0007*** (.0002)
<i>S</i>	---	.092 (.863)	.979*** (.541)	---
<i>SAMPLE SIZE</i>	616	167	449	616
<i>R²</i>	.257	.251	.245	---
<i>Adjusted R²</i>	.241	.187	.223	---
<i>X²</i>	---	---	---	267.7

* Note: Standard errors are in parentheses, *** indicates significance at the .01 level, ** indicates significance at the .05 level and * indicates significance at the .10 level.

Table 5**THE COMPONENTS OF THE
RESEARCH GAP BETWEEN ECONOMISTS AT HBCUs AND NON-HBCUs****(In Percent)**

Portion due to Selection	16.22
Selection Corrected Gap	83.78
Total Gap	100 percent

Appendix A:**LIST OF HOME INSTITUTIONS OF ECONOMICS FACULTY MEMBERS INCLUDED
IN THE STUDY**

1	* Alabama A&M State Univ.	46	* Grambling State Univ.
2	* Alabama State Univ.	47	Grand Canyon Univ.
3	* Albany State College	48	Greensboro College
4	* Alcorn State Univ.	49	Grinnell College
5	Alma College	50	* Hampton Univ.
6	Aquinas College	51	Hartwick College
7	Athens State College	52	Hendrix College
8	Augsburg College	53	Illinois Wesleyan Univ.
9	Augusta College	54	Indiana Wesleyan Univ.
10	Augustana College (IL)	55	* Jackson State Univ.
11	Augustana College (SD)	56	Jacksonville Univ.
12	Austin Peay State	57	Jersey City State College
13	Belmont Univ.	58	* Kentucky State Univ.
14	* Benedict College	59	Kenyon College
15	* Bethune Cookman College	60	Kings College
16	Bloomfield College	61	Lafayette College
17	Brescia College	62	Lamar Univ. (Beaumont)
18	Cameron Univ.	63	Le Moyne College
19	Campbell Univ.	64	Lewis and Clark College
20	Carroll College	65	* Lincoln Univ. (MO)
21	Carson - Newman College	66	* Lincoln Univ. (PA)
22	Centenary College	67	Louisiana State Univ. (Shreveport)
23	* Central State Univ.	68	Lycoming College
24	* Cheyney Univ. of Pennsylvania	69	Marietta College
25	* Clark Atlanta Univ.	70	Marist College
26	Colorado College	71	Mcneese State Univ.
27	CUNY – Lehman	72	Merrimack College
28	CUNY – Staten Island	73	Middlebury College
29	David Lipscomb Univ.	74	Millersville Univ.
30	* Delaware State Univ.	75	* Mississippi Valley State Univ.
31	Depauw Univ.	76	Moorhead State Univ.
32	* Dillard Univ.	77	* Morehouse College
33	Drake Univ.	78	* Morgan State Univ.
34	Elmhurst College	79	Morningside College
35	Emory and Henry College	80	* Morris Brown College
36	* Fayetteville State Univ.	81	Mount Holyoke College
37	Ferris State Univ.	82	Mount Saint Marys College
38	* Fisk Univ.	83	Murray State Univ.
39	* Florida A&M Univ.	84	* Norfolk State Univ.
40	Florida Southern College	85	North Adams State College
41	* Fort Valley State College	86	* North Carolina A&T State Univ.
42	Frostburg State Univ.	87	* North Carolina Central Univ.
43	Gannon Univ.	88	Northeastern Illinois Univ.
44	Geneva College	89	Oglethorpe Univ.
45	Georgia College	90	Ohio Wesleyan Univ.

91	Plymouth State College	116 *	Univ. of Arkansas at Pine Bluff
92 *	Prarie View A&M Univ.	117	Univ. of Hartford
93	Providence College	118	Univ. of Houston – Downtown
94	Saginaw Valley State Univ.	119	Univ. of Michigan – Dearborn
95	Saint Anselm College	120	Univ. of Northern Iowa
96	Saint Cloud State Univ.	121	Univ. of Portland
97	Saint Marys College (IN)	122	Univ. of Puget Sound
98	Saint Marys Univ.	123	Univ. of South Carolina -Spartanburg
99	Salve Regina Univ.	124	Univ. of Texas - Pan American
100	Samford Univ.	125	Univ. of Texas – Permian Basin
101	Simpson College	126	Univ. of Texas – Tyler
102	Smith College	127 *	Univ. of the District of Columbia
103 *	South Carolina State Univ.	128	Univ. of Wisconsin - Superior
104	Southeastern Oklahoma State Univ.	129	Univ. of Wisconsin - Whitewater
105	Southern College of Seventh Day Adventists	130	Utica College of Syracuse Univ.
106	Southern Nazarene Univ.	131 *	Virginia State Univ.
107 *	Southern Univ. (Baton Rouge)	132	Washington and Lee Univ.
108	Southern Utah Univ.	133	Webster Univ.
109	St Lawrence Univ.	134 *	West Virginia State College
110	SUNY - Purchase	135	Westminster College
111 *	Tennessee State Univ.	136	Wheaton College (IL)
112	Texas Lutheran College	137	Wheaton College (MA)
113 *	Texas Southern Univ.	138 *	Winston - Salem State Univ.
114 *	Tuskegee Univ.	139	Woodbury Univ.
115	Union College	140	York College (PA)

Notes: An asterisk denotes that the institution is a Historically Black College or University (HBCU)