

HBCUs' Institutional Advantage: Returns to Teacher Education

By

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© August 2005

Abstract

From the very outset, a primary role of Historically Black Colleges and Universities (HBCUs) was to prepare teachers to instruct America's blacks, who had very limited sources of educational training. Many of these institutions were known as "normal schools" or "teachers colleges." It stands to reason that certain institutional advantages should have developed over the past 150 years for these colleges in producing high-quality teachers. This result should be reflected in teacher earnings that accrue to HBCU graduates. This chapter tests this hypothesis and seeks to explain existing differences in teacher earnings of HBCU and non-HBCU graduates.

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I. Introduction

Historically Black Colleges and Universities (HBCUs) represent a great minority serving institution (MSI) tradition in the United States.¹ In the past they represented fledgling institutions with a mandate to train the best and brightest black students in the country. Today they represent a broad spectrum of institutions of higher learning types that still garner many of the best black high school graduates in the nation and transform them into college graduates.

From the very outset, a unique feature of HBCUs was their role as “normal schools” or “teacher colleges.” Given the value placed on education and the fact that serving as an educator was a highly prized position in the black community, many of the students who attended HBCUs did so for the express purpose of becoming educators.

Over the nearly 150 years of their existence, one would expect HBCUs to develop institutional advantages in producing high-quality elementary and secondary school teachers. These teachers, in turn, would experience superior outcomes in the classroom (i.e., they would produce relatively higher performing students), which would result in relatively higher level earnings for these teacher than for teachers who study at non-HBCUs. For certain, one would not expect earnings to be lower for HBCU-trained teachers than for teachers trained at other institutions of higher learning. This conjecture constitutes the authors’ hypothesis about returns to HBCU teacher education. We test this hypothesis using a data set from the National Center for Education Statistics (NCES) Baccalaureate and Beyond Longitudinal Study (B&B).

¹ See <http://www.ed.gov/about/inits/list/whhbcu/edlite-list.html> for a list of HBCUs.

Part II of this chapter provides background information on HBCUs, including information about recent financial crises that these MSIs have experienced. Part III reviews key literature on the determinants of earning. Part IV explores the development of institutional advantages for HBCUs vis-à-vis the production of elementary and secondary school teachers. We discuss our data source and the model in part V. Part VI features our results. We conclude in part VII.

II. HBCUs and Teacher Education Including Recent Financial Crises

Black people in America have consistently sought success through their intense and diligent efforts to obtain education. In the 21st century, this remains true and is a primary focus for thousands of black students who continue to pursue the “American dream.” During the early 19th century, HBCUs emerged out of a craving for “something better.” Since 1837, HBCUs have provided a haven for fostering educational, economic, and cultural leadership for blacks and the society at large.

HBCUs were established to address the educational needs of blacks who had gained their freedom during the pre- and post-Emancipation Proclamation period. Although these havens for freed slaves were referred to as “universities” or “institutes,” the education obtained on these campuses was at the elementary and secondary levels. It was not until the 20th century that HBCUs began implementing postsecondary level courses (U.S. Department of Education, 1991).

A strong institution in the black community, HBCUs are very influential; they unite and focus blacks on social, economic, cultural, and educational issues. In addition, these institutions have served as nurturing, non-threatening academic environments for

black youth. A distinct outcome of this positive environment is that black students have experienced unpredicted educational success (Congressional Hearing, Wilberforce University, 2002).

Early on, whites who founded the first HBCUs determined that the primary purpose for the institutions of higher learning was to impart practical knowledge and to teach industrial skills. Booker T. Washington, a graduate of Hampton University and a famous educator, eventually founded his own school and echoed this same purpose; espousing that blacks should gain vocational skills and prepare for a life working with their hands. This viewpoint, however, was countered by W. E. B. DuBois who strongly advocated that black students, like their white counterparts, should target areas of study that were a match for their interest and aptitude (Allen & Jewell, 2002 and Phillips, 2002).

Allen & Jewell (2002) posited that the underpinnings of the industrially focused curriculum at HBCUs were inextricably linked to the need to control blacks by wealthy whites, corporate philanthropists, and white-dominated agencies. These funding sources were the lifeline of HBCUs and, because of this dependency, HBCUs were obligated to deliver instruction based on the industrialist curriculum model.

One oasis for blacks who desired to participate in an academic setting outside of the industrial and vocational structure was the small number of African Methodist Episcopal (AME) Church HBCUs. These religious-based institutions were able to implement DuBois' model—adapting the approach of matching ability with interest. AME HBCUs motivated other HBCUs to adopt liberal arts curricula and instigated a split among black intellectuals (Phillips, 2002 & Allen et al., 2002).

Despite their differing curricula, HBCUs were consistent on three major fronts: (1) They educated black youth; (2) they prepared teachers; and (3) they perpetuated the Anglo-Saxon missionary tradition. As much as HBCUs have been a refuge for black students—a place where individuals of color could broaden their horizons in an atmosphere of acceptance—they have a long history of confronting major challenges. Philips (2002) indicates that these challenges include, but are not limited to: (1) Tight fiscal budgets and scarce physical resources; (2) faculty salary inequities; (3) lagging technological advances; ill-prepared incoming freshmen; and (4) governance sharing.

Amid the remarkable struggle to contribute to the success of black students specifically and students generally, HBCUs take disproportionate credit for the production of black graduates of four-year and graduate-level institutions. Although this credit is well deserved, HBCUs continue to face serious problems.

In 2001, four prominent educators who served as presidents of HBCUs, met at a congressional hearing at Wilberforce University to discuss some of the pressing and most pivotal issues related to black colleges and universities. These issues included: (1) the continuation of Pell Grant funding and increased Pell Grant maximum awards; (2) the provision and increase of Title III-B institution assistance; (3) increased Trio funding and an increase in access for lower income students and retention of students; 4) increased funding for international programs; and (5) federal government support for technological infrastructure (U.S. House Committee on Education and the Workforce, 2001).

The over 100 HBCUs are located in 20 states, the District of Columbia, and the Virgin Islands, and they account for about three percent of all institutions of higher

learning in the nation. However, they account for a staggering 28 percent of all black students in America's higher education system that complete their undergraduate degrees (Roscoe, 2001). Fifteen percent of blacks who earn Master's and professional degrees graduate from HBCUs, and 10 percent of those who earn doctoral degrees matriculate at HBCUs (U.S. Department of Education, 1991).

Despite these striking statistics, HBCUs are experiencing retention and completion problems that are not easily discerned by the casual observer. Freedman (2005) reported that nationally, HBCUs have a six-year graduation rate of 38 percent. This rate is moderately lower than the statistic for black students at all other institutions, and is approximately 40 percent lower than for blacks at prestigious and elite schools.

An important factor that impinges on the critical reality of low retention and completion rates is the increasing responsiveness of high achieving black students to the now perceived less threatening environment at traditionally white institutions. At an increasing rate, high-quality (based on competitive GPAs and test scores) black students are opting to attend institutions of higher learning other than HBCUs.

As the pool of black students who are college-prepared shrunk, HBCUs reacted by instituting lower thresholds for both incoming freshmen's GPAs and standardized test scores in order to keep enrollment up. They are paying for these lowered admission standards with remedial courses and college-readiness programs (Allen et al. 2002).

Simply put, HBCUs are plagued by an inability to retain black students who are not academically or developmentally prepared to successfully complete a curriculum leading to an undergraduate degree. In addition to the retention and completion

problems, HBCUs are confronted with financial woes and an inferior technological infrastructure. Freedman (2005) noted the following in a recent article:

With the desegregation of colleges and universities in the South and the increased recruiting of black students by top universities, what W.E.B. DuBois famously called the "talented tenth" no longer heads to places like Texas Southern by default. In fact, the top 10 percent of graduates from any Texas high school are guaranteed admission to the state university system (para. 10).

Even after considering all of the challenges that confront HBCUs today, some of the finest and the brightest citizens of America--descendants of slaves-- graduated from HBCUs. Eighty percent of black federal judges, 60 percent of black attorneys, 70 percent of dentists, and 50 percent of black teachers in public schools graduate from HBCUs. Additionally, 50 percent of black faculty at white research universities earn their undergraduate degrees from HBCUs. Notably, Spelman College and Bennett College produce more than half of the American female doctoral students in the field of science (United Negro College Fund, 2005).

III. Determinants of Earnings

Theoretically, in a monopsonistic economic environment, teacher wages are set equal to the value of their marginal revenue product.² In other words, teachers earn an amount equal to their factor input share of the revenue received by a school system for the marginal (final) student that is enrolled. More realistically, from an employer's perspective, teacher earnings are determined by a variety of factors, including, but not limited to, student outcomes, tenure, the subject matter taught, etc. These factors broadly indicate teacher quality. Indeed, Rivkin et al. (2001) state that teacher quality is the key ingredient that determines variation in student academic achievement. NCES

² It appears reasonable to consider a monopsony market environment, because most teachers work in public school systems that act as the primary purchaser of teacher services.

(2000) reports that teacher quality may be characterized by the following four factors: (1) Academic skill; (2) assignment; (3) experience; and (4) professional development. Figure 1 illustrates the transmission mechanism that transforms these four teacher quality-factors into earnings.

Because there is variation in teacher quality, one expects that there should be variation in teacher earnings. Therefore, if a certain subset of teachers has higher levels of teacher quality, then one expects these teachers to accrue higher earnings—*ceteris paribus*. In this case, given the evidence presented earlier, we advance the falsifiable hypothesis that teachers trained at HBCUs should possess superior amounts of the first of these four factors—academic skills. That is, HBCU-trained teachers should have superior teaching skills and should, therefore, be able to obtain superior returns to their education.

Constantine (1995) finds that, for students with similar characteristics or option sets, there are higher returns for those graduating from HBCUs than for those graduating from non-HBCU institutions. These findings conflict with those presented by Ehrenberg & Rothstein (1994), who contended that HBCU-graduates do not incur higher returns compared with similar graduates of non-HBCUs. Constantine's (1995) analysis is statistical and is not restricted to persons employed in the field of education; no qualitative interpretation is provided in defense of these findings. Nevertheless, the literature is replete with analyses of existing white-black differences in returns to education or training--irrespective of the academic institution attended.³ Important contributors who seek to explain this difference include: Mason (1997); Neal & Johnson

³ At the time of this writing, the U.S. Department of Labor, Bureau of Labor Statistics reported that the median weekly wage for whites exceeded that for blacks by \$145 during the second quarter of 2005; see <http://www.bls.gov/news.release/wkyeng.t01.htm> .

(1996); Constantine (1995); Maxwell (1994); Hirsch & Schumacher (1992); Griliches (1977), and Oaxaca (1973). Given that HBCUs often enroll poorer quality students than do certain non-HBCU institutions, it is with caution that we hypothesize that HBCU-trained teachers obtain higher returns to education than do non-HBCU-trained teachers. We do so based on the principles of “institutional advantage.”

IV. Institutional Advantage Effects Generally and the HBCU Case Specifically

The concept of “institutional advantage” is akin to the economic concepts of “absolute” or “comparative” advantage. Based on the work of Adam Smith (1776) and David Ricardo (1817), the latter two concepts embody the idea that one economic agent (x) requires fewer inputs (e.g., labor and physical capital) to produce two goods, say trained elementary and secondary school teachers, than another economic agent (y).⁴ If agent x can produce trained elementary school teachers using less inputs than agent y, then we say that agent x has comparative advantage in producing that good. If, on the other hand, agent x can produce both elementary and secondary school teachers using less inputs than agent y, then we say that agent x has an absolute advantage over agent y in producing these two goods. In this case, economic agent x could be an institution, hence the institution would be said to have comparative or absolute advantage in producing teachers.

What we know about nations, firms, or institutions that have comparative or absolute advantage in production and that operate in a competitive market environment is that, because their goods are produced relatively cheaply, these national, firm, or

⁴ For purposes of this analysis, we assume that agents x and y only produce elementary and secondary school teachers.

institutional producers normally have an opportunity to expand their production to meet increased demand in response to consumers' willingness to purchase the cheaply produced goods. The opportunity to expand production or simply to remain operational for an extended period of time produces conditions under which producers are able to refine and improve their production techniques; thereby becoming more and more efficient and proficient in production. This process of "specialization" can lead to an improvement in the quality of the goods produced. In the case of a monopsonistic (one buyer) market environment, the opportunity to expand production may not occur, but producers with comparative or absolute advantage generally have the opportunity to remain in production and to experience the type of continued quality improvements that occur under similar circumstances in a competitive market environment.⁵

HBCUs reflect the characteristics of institutions with absolute or comparative advantage in the production of elementary and secondary school teachers. Initially, due to racial segregation, HBCUs were the primary source of teachers for a growing black population in the United States. Strong demand for black teachers provided HBCUs with an opportunity to expand production of trained teachers and to develop, on "a learning by doing basis," the formula for producing high quality teachers. There was no obvious economic incentive for black teachers to exhibit professional excellence, but professional pride drove this outcome nonetheless. HBCUs and their teacher graduates were part of a culture of "being better than whites, just to be considered equal."⁶ In addition, over the years, sub-par physical plants and budgets forced HBCUs to learn "to

⁵ For simplicity, we discuss a direct monopsonistic relationship between producers and purchasers of teacher services, and exclude consideration of individual teachers' roles in selling their services to schools. The implication is that purchasers of teacher services view the training institution as an important signal of quality of individual teaching skills.

⁶ See Mason (1997, p. 7).

do more with less.” Consequently, a culture of efficiency and excellence evolved at HBCUs—especially in the production of teachers.

After the onset of racial integration, when it became apparent that HBCUs no longer held a monopoly on the training of teachers for black students, these institutions called on their efficiency and history of superior performance to refine further their formula for producing high quality teachers. They were driven to accomplish this because, if they were unsuccessful, one of two outcomes would ensue: (1) HBCU trained teachers would not be able to compete in the market place and HBCUs would no longer attract students headed for the field of education; and/or (2) black students who desired to teach would opt to attend non-HBCU institutions to obtain training and HBCUs would no longer be needed to train teachers..

The pressure emanating from these circumstances caused a further refinement of HBCUs’ formula for producing high quality teachers and created the institutional advantage in producing elementary and secondary school teachers to which we refer.

HBCUs’ continued existence today is *prima facie* evidence of their excellence and efficiency in producing high quality teachers.

It is with this background in mind that we form the falsifiable hypothesis that,

“Given the underlying monopsonistic structure of the market for public school teachers in the United States, teachers trained at HBCUs exhibit comparatively superior performance and, therefore, accrue superior returns to their education. At a minimum, such HBCU-taught teachers accrue earnings that are generally greater

than or equal to, but no less than, earnings of non-HBCU-taught teachers.”

We form this hypothesis despite evidence concerning the resource constraints that HBCUs have confronted and continue to confront, and the fact that HBCUs quite often produce teachers from students that begin their higher-learning experience with an inferior skill set. Those who would adopt the antithesis of our hypothesis may use the generally lower pre-college skill set of HBCU enrollees as an indicator of HBCUs inability to produce high-quality teachers because certain HBCU enrollees are taught by HBCU-taught elementary and secondary school teachers.

V. The Data and Model

Using participants in the National Postsecondary Student Aid Study (NPSAS), NCES' B&B data set provides information on education and work experience after completion of bachelor's degrees.^{7,8} The B&B data set captures information on baccalaureate degree holders who completed their degree in the 1992-93 academic year and who were followed up in 1994 and 1997 (B&B 93/97). B&B data are linked to data collected from NPSAS participants at the end of their secondary school experience. It is a rich source of data typically required for the study of returns to education. Our analysis focuses primarily on B&B data for 1997, because four years should be sufficient time for graduates to settle into the workforce.⁹ Therefore, the data

⁷ See <http://nces.ed.gov/b&b/>.

⁸ We used NCES' Data Analysis System to create our data sets. Given access restrictions, we created correlation matrices (CMs) and generated regression results using the CMs.

⁹ Griliches (1977, p. 3) recommends a decade and Constantine's (1995, p. 542) wage observations are for the tenth year after graduation.

used in the analysis should not reflect undue influence from the types of economic uncertainties and volatility that characterize new graduates' lives.

Table 1 provides a list of the variables that appear in our regression models that use an hedonic-type approach to identifying relationships between earnings and variables that are related to earnings, including attendance and/or graduation from an HBCU.¹⁰ Equation 1 shows that our models have an earnings variable on the left-hand side, and a variety of demographic (**D**, race and gender), background (**B**, mother's and father's education, family income, attendance at an HBCU, college grade point average (GPA), formal training beyond college, work experience, and education major), and direct-determinant (**DD**, region of residence, employment status, multiple jobs, and placement) variables that influence earning outcomes.

Equation 1

$$Earnings = \alpha_1 + \sum_{i=1}^2 \beta_i D_i + \sum_{j=1}^{11} \gamma_j B_j + \sum_{k=1}^4 \lambda_{kk} DD_k + \varepsilon$$

Test scores is an often cited background variable that appears in regression models that seeks to explain differences in returns to education. It is not included in our model because B&B participants split themselves almost equally between those taking the American College Test (ACT) and those taking the Scholastic Aptitude Test (SAT).¹¹ Efforts to include a test score variable would have reduced our sample size and the validity of our study considerably. Because the literature indicates that test scores are

¹⁰ Our analysis deviates from the norm in our use of earnings. Similar studies use wages, a variable that was unavailable in the B&B data set for 1997.

¹¹ Neal & Johnson (1996) successfully use the Armed Forces Qualification Test to explain almost all of the difference in returns to education for white, black, and Hispanic men and women.

correlated with college GPAs—a variable that is included in our models—we are comfortable with the absence of a test score variable in our model.¹²

Variable selection for our models are consistent with the previously cited literature. Clearly, demographic variables are standard fare. Use of background and direct-determinant variables is mixed. Mason (1997) controls for educational achievement, work tenure, age, health, marital status, union participation, parents' income, education, and regional origin, position in the family hierarchy vis-à-vis siblings, citizenship status, regional indicators, and religion as variables in his models. Neal & Johnson (1996) only use test scores in combination with demographic variables in their models. Constantine (1995) uses all of the background variables included in our model; except that test scores replaces GPA. Maxwell (1994) controls for parents' education, number of siblings, and years of schooling in his models. Hirsch & Schumacher (1992) use years of schooling, experience, current job tenure, union membership, marital status, employment status (full-time), location, and a racial density variable in their effort to explain white-black wage differences. Griliches (1977) models earnings as a function of age, schooling, desired wages, wages earned at last job, test and I.Q. scores, father's occupation, culture, experience, location, and region. Finally, Oaxaca (1973) explains white-black wage differences using experience, schooling, class of worker, industry, occupation, worker health, employment status, mobility, marital status, location, and region. This eclectic mix of variables for the various models indicates that there is no "golden" variable set, and that certain included variables may be an artifact of which variables are available in a particular data set.

¹²In 2001, University of Minnesota (2005) researchers found that test scores were highly predictive of college GPAs using a variety of specifications. See http://www1.umn.edu/urelate/newsservice/newsreleases/01_04SAT.html .

A relatively unique variable in our models is “placement / job in degree field,” which captures the relationship between current employment and formal training. Logically, one would be expected to exhibit higher performance in jobs that are closely related to ones formal training than in jobs that are unrelated to ones formal training. We augment this variable in certain models with an “education major” variable, which should also signal superior performance as an educator.

Admittedly, our models are not as intricate as those presented by Mason (1997), Constantine (1995), and Griliches (1977), who employ more “conditional” approaches to estimating white-black wage differences.¹³ However, our task is constrained to determining whether attending an HBCU adversely affects a teacher’s earnings. Essentially, we are ultimately concerned only with those who have arrived at the teaching profession using many routes. Our question is, “Does attendance at an HBCU lead to relatively higher or lower earnings?”

Using equation 1 as the basic framework, we developed three models. Model 1 features the full B&B data set that makes no distinction for industry of employment. This model provides a baseline against which to compare the remaining two models. Model 2 includes observations that are restricted to only those with primary employment in the education industry; i.e., elementary or secondary school teachers. This model permits us to focus only on educators and to assess the effects of attendance and graduation from an HBCU on earnings. Model 3 represents two sub-models from Model 2: One for black educators and one for white educators. Model 3 results provide the

¹³ Conditional-type models employ a system of equations to account for pre-market factors that can influence earnings.

ingredients for a Oaxaca decomposition.¹⁴ We use the coefficients from the two sub-models along with the mean values of the variables to decompose differences in returns to education that are explained by attendance at HBCU and the remaining covariates.

Table 2 provides our expectations for the following signs on the variable coefficients defined in equation 1 on a model-by-model basis. The only variables about which we are uncertain of the signs of the coefficient are “formal training beyond college.” On the one hand, additional formal training should produce more effective teachers which should produce a positive effect on earnings. On the other hand, additional formal training is likely to reduce experience in the classroom, which could have a negative effect on earnings. Consequently, on an *a priori* basis, the signs on the coefficients for these variables are indeterminant.

VI. Results

Tables 3 (Model 1), 4 (Model 2), and 5 (Model 3) present the results of our ordinary least squares regression analysis. For Models 1 and 2, we first present results for a basic equation (A), then add the “race” variable in the second equation (B), and, finally, add the “graduated from or attended an HBCU” variable in the third equation (C). The goal is to clearly show the impact “graduating from or attending an HBCU” on earnings. This stepwise process is shortened for Model 3 because the model is based on race specific data; i.e., there is no equation “B” equivalent.

¹⁴ See Oaxaca (1973).

Model 1

The regression results for Model 1 in table 3 are representative of the full B&B data set. The signs on parameter estimates are as expected, except for “race,” “mother’s education,” and the “graduated from or attended an HBCU” variables. The positive sign on the parameter estimate for “race” does not meet expectations. It was hypothesized, at least for Models 1 and 2, that black respondents would generally accrue less earnings than non-blacks, which is a common finding in studies on white-black wage differences. Importantly, the coefficients on the “race” variable are small and statistically insignificant at the five-percent level. Recall from table 1 that “mother’s education” is a binary variable that takes on the value 1 when the mother has a Bachelor’s degree or higher; it is 0 otherwise. It turns out that the parameter estimate for this variable is negative in Models 1 and 3.2; it is positive in Models 2 and 3.1. This result implies that there was a preponderance of respondents who had relatively high earnings, and whose mothers did not possess Bachelor’s degrees. The sign on the “graduated from or attended an HBCU” variable is negative, is relatively small, and it is not statistically significant. This outcome is the antithesis of our expectations and is inconsistent with Constantine’s findings. The variable’s statistical insignificance in the regression equation implies that returns to education are not significantly affected by the institution from which one receives college training.

The parameter estimates on all other variables in Model 1, except for “father’s education” are significant at the five-percent level. Interestingly, the signs on parameter estimates for formal training beyond the first degree are mixed. Having engaged in “Some formal training,” or having obtained a “second Bachelor’s degree” or a “Master’s

degree” appears to detract from earnings, while having obtained a “professional or doctoral degree” appears to enhance earnings.

Model 2

Model 2 results that are presented in table 4 represent respondents whose primary employment was as educators in 1997. The signs on all of the parameter estimates meet expectations, except for “race,” “father’s education,” “graduated from or attended an HBCU,” and “education major.” The signs on the “race” and “graduated from or attended HBCU” variables are consistent with those in Model 1. The coefficient on the “father’s education” variable mimics the outcome for “mother’s education” in Model 1 (except that the coefficient is statistically insignificant), and appears to carry the same implication. The negative sign on the coefficient for the “education major” variable is somewhat surprising, but it is consistent with a well-known fact that teachers holding undergraduate degrees in education are often paid less than teachers who may receive undergraduate training in other fields, particular mathematics or the sciences. Notably, the coefficient on the “education major” variable is not statistically significant.

Model 3

Model 3 is presented in table 5.A (Models 3.1.A and C) and 5.B. (Models 3.2.A and C). Recall that these two models provide the ingredients for a Oaxaca (1973) decomposition of white-black earning differences that will be presented later. Models 3.1.A and C provide regression results for whites, while Models 3.2.A and C provide

regression results for blacks; hence, the models in table 5 reflect no results for the “race” variable.

The signs on parameter estimates in table 5.A (Models 3.1A and C) are consistent with those shown in Model 2, except for the “graduated from or attended an HBCU.” In this case, the variable reflects a positive coefficient, which is consistent with our hypothesis, but the coefficient is not statistically significant. This sign on the coefficient might be interpreted in several ways, including: (1) White students who attend HBCUs develop unique academic and/or social skills that facilitate the acquisition of high earnings as teachers; (2) these students may be products of under-privileged backgrounds and are, therefore, motivated to work smarter and harder to garner higher earnings; or (3) as mentioned in the discussion of Model 1, these results may simply imply that training institutions have little effect on teacher earnings.

It is important to note that Models 3.2.A and C are slightly different from the previously discussed models. Table 5B shows that the N for these models is 83, and that no black educators in the data set reported “some formal education beyond the first degree” or “professional or doctoral degrees.”¹⁵ In addition, there are several interesting results to discuss for these regressions for black educators.

The signs on the coefficients for this model are most consistent with those for Model 1; e.g., there is a negative coefficient on the “mother’s education” variable which is statistically insignificant; and the coefficient on the “graduated from or attended an HBCU” variable is negative and statistically insignificant. However, we find that while “multiple jobs” was indicative of lower earnings for whites, it is an indicator of higher earnings for blacks--the coefficient is insignificant. In addition, the coefficients on two

¹⁵ Such a small sample size should prompt cautious acceptance of results derived from this model.

apparently related variables carry signs that are different from those reflected in the previously discussed models: “Placement / job in degree field” has a negative coefficient, while “education major” carries a positive coefficient. Although both of the coefficients are statistically insignificant, they could be interpreted, on a combined basis, to mean that blacks teachers who are not trained as teachers are not as successful in securing higher earnings as those who hold degrees in education. One of the most striking results, however, is a negative, statistically insignificant coefficient on the GPA variable. If the coefficient was significant, it would lend credence to the theory that grades and test scores are not perfect predictors of job performance and the ability to accrue high earnings.

A Oaxaca Decomposition

As a final step in this analytical process, we use the results from Models 3.1.C and 3.2.C to prepare a Oaxaca (1973) decomposition of the difference between white and black teacher earnings. The decomposition is based on the following formula:

Equation 2

$$\begin{aligned} \overline{E}^b - \overline{E}^w = & \beta^b (\overline{D}_i^b - \overline{D}_i^w) + \sum_{j=1}^{11} \gamma_j^b (\overline{B}_j^b - \overline{B}_j^w) + \sum_{k=1}^4 \lambda_k^b (\overline{DD}_k^b - \overline{DD}_k^w) + \\ & (\alpha^b - \alpha^w) + \left((\beta^b - \beta^w) \overline{D}_i^w \right) + \left(\sum_{i=j}^{11} (\lambda_i^b - \lambda_i^w) \overline{B}_i^w \right) + \left(\sum_{k=1}^4 (\lambda_k^b - \lambda_k^w) \overline{DD}_k^w \right), \end{aligned}$$

where E represents earnings, superscripts b and w or for black and white, respectively, the barred variables (e.g., \overline{D}) represent mean values for the variables, and the variables and coefficients are as defined for Model 3 and as described before equation 1 above.

Equation 2 is uncharacteristic in that the decomposition is performed with whites serving as the “discriminated group.” This is a result of the surprising fact that the B&B data set reports the mean earnings for black educators as \$27,382.90 in 1997, while it is \$23,772.62 for whites; this black-white difference in earnings is \$3,610.28 or about 15 percent.¹⁶ The decomposition produces values for the terms appearing on the right-hand side of the equal sign in equation 2, which are provided in equation 3.

Equation 3

$$\$3610.28 = -\$188.70 - \$553.31 + \$207.23 + \$17,119.00 + \$1,287.89 - \$12,834.89 - \$1,426.65.$$

Consequently, -\$534.78 of the difference in black-white earnings is accounted for by differences in the average characteristics of black versus white educators (i.e., the sum of the first three terms in equation 3). This negative value implies that white teachers in the data set generally reflect higher average values for the explanatory variables that are in our models. The sum of the last four values in equation 3, \$4,145.36, represents the unexplained portion of the earnings difference between black and white teachers. Typically, when white earnings exceed black earnings, the latter value is often labeled “the value of discrimination.”

VII. Conclusion

This chapter is unique in its use of the B&B data set to assess the black-white wage gap for teachers, and for its study of the affect of HBCU versus non-HBCU training on returns to education for teachers. The results for Model 3.1 revealed that there was a positive, but statistically insignificant, effect on the earnings of white

¹⁶ This result is inconsistent with statistics provided by the NCES (2004, p. 94), which reports that white teachers' total earned income (derived from teaching and other pursuits) exceeded that of black teachers by \$2,249 for the 1999-2000 school year. The results cited in our study indicate that black respondents to the B&B survey experienced higher than average earnings.

teachers who trained at HBCUs. Overall, the results may be interpreted to mean that HBCU attendance has no statistically significant effect on returns to education for black or white teachers. This may be surprising to some who equate financial and other resources constraints that HBCUs face with an inability to produce educators with sufficient skills to perform effectively in the classroom and to elicit high earnings. The results presented in this chapter represent a different outcome; one which is supported by institutional advantages that HBCUs have developed during their over 150-year history. It bears mentioning that the small sample of black educators in Model 3.2 may be the basis for certain unexpected results.

We hope that readers will take the time to explore further the econometric results provided in this chapter, to think through them carefully, and to formulate logical explanations for them. In addition, other scholars might pursue further analysis of the rich B&B data set to sift out reasons for these interesting results. Specifically, we recommend efforts to augment the explanatory variables that we use with variables that other scholars have incorporated into their models for explaining white-black earning differences. These efforts may produce more complete explanations for white-black earning differences for teachers. Finally, we plan to explore further the role of institutional advantages in the survival of HBCUs and other MSIs and hope that other scholars will do likewise.

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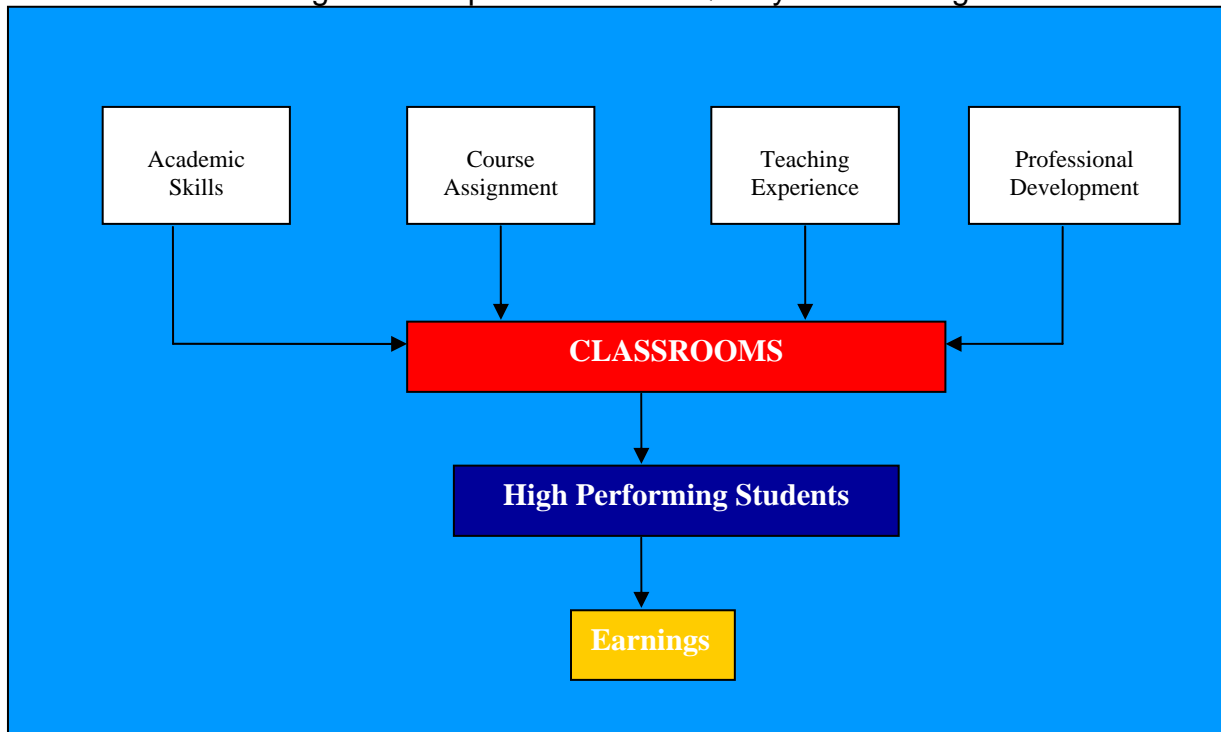
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.Figure 1.—Optimal Teacher Quality and Earnings



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Table 1.—Model Variables

Line No.	Variable type*	Variable description	Model variable name	Variable B&B code
1	Dependent	Annual salary for April 1977	Earnings	B2APRS1
2	D	Race/ethnicity: Black, 1, 0 otherwise	Race	RETHNI1
3	D	Gender: Male, 1; 0 otherwise	Gender	Gender1
4	B	Highest level of mother's education: Bachelors degree or higher, 1; 0 otherwise	Mother's education	MOTHEd1
5	B	Highest level of father's education: Bachelors degree or higher, 1; 0 otherwise	Father's education	
6	B	Total income of parents and independent student (while in undergraduate program)	Family income	CINCOM1
7	B	Historically black institution: Attended or graduated from and HBCU, 1; 0 otherwise	Graduated from or attended an HBCU	HBCU1
8	B	Cumulative grade point average as an undergraduate	College GPA	GPACUM1
9-12	B	Highest degree received after bachelors: Some formal training; Bachelors degree; Master's degree; professional or doctoral degree	Formal training beyond first degree	B2HDGP1, 2, 3, and 4
13	DD	Region of residence in 1997: Southeast, 1; 0 otherwise	Region	B2REGI1
14	DD	Employment status in April 1997: Less than full time, 1; 0 otherwise	Employment status	B2EM971
15	DD	Employed in multiple jobs: Multiple jobs, 1; 0 otherwise	Multiple jobs	B2MJOB1
16	DD	Relationship between April 1997 job and degree field: Closely, 1; 0 otherwise	Placement / job in degree field	B2AJRE1
17	B	Total teaching experience in years	Experience	B2SPEX1
18	B	Undergraduate major: Education, 1; 0 otherwise	Education major	UGMJCO1
19	DD	April industry code: Education, 1; 0 otherwise	Teacher Industry	B2AJOB1

D=Demographic; B=Background; and DD=Direct Determinant

Table 2.—Expected signs for variable coefficients

Line No.	Variable names	Model 1	Model 2	Model 3	
				Blacks	Non-blacks
1	Race	-	-		
2	Gender	+	+	+	+
3	Mother's education	+	+	+	+
4	Father's education	+	+	+	+
5	Family income	+	+	+	+
6	Graduated from or attended an HBCU	+	+	+	+
7	College GPA	+	+	+	+
8-11	Some formal training beyond first degree	?	?	?	?
12	Region	-	-	-	-
13	Employment status	-	-	-	-
14	Multiple jobs	-	-	-	-
15	Placement / job in degree field	+	+	+	+
16	Experience		+	+	+
17	Education major		+	+	+
18	Education industry				

Table 3.—Model 1 Results

Line no.	Variables	Model 1.A		Model 1.B		Model 1.C	
		Parameter estimates	t-statistics	Parameter estimates	t-statistics	Parameter estimates	t-statistics
1	Intercept	18584.00	12.99	18519.00	12.74	18494.00	12.72
2	Race			210.85	0.26	483.47	0.52
3	Gender	7346.60	18.61	7354.66	18.57	7352.97	18.56
4	Mother's education	-988.09	-2.06	-991.09	-2.07	-986.03	-2.06
5	Father's education	528.05	1.16	535.42	1.17	534.22	1.17
6	Family income	0.01	3.57	0.01	3.58	0.01	3.57
7	Graduated from or attended an HBCU					-865.89	-0.67
8	GPA	39.32	9.13	39.47	9.09	39.56	9.10
9	Some formal training beyond first degree	-4267.36	-3.56	-4259.41	-3.55	-4259.42	-3.55
10	Second Bachelor's degree	-3054.58	-2.49	-3059.57	-2.50	-3062.12	-2.50
11	Master's degree	-2696.68	-3.91	-2698.87	-3.91	-2700.04	-3.91
12	Professional or doctoral degree	5921.74	5.08	5919.80	5.08	5905.77	5.07
13	Region	-1676.41	-3.71	-1687.96	-3.71	-1663.11	-3.65
14	Employment status	-13737.00	-27.43	-13734.00	-27.41	-13730.00	-27.40
15	Multiple jobs	-7441.19	-9.46	-7443.11	-9.46	-7431.29	-9.45
16	Placement / job in degree field	2379.05	6.02	2381.53	6.02	2380.13	6.02
17	Experience						
18	Education major						
19	Adjusted R-square	0.1548		0.1547		0.1546	
20	N	8124		8124		8124	
21	F-statistic	115.45		107.20		100.80	
22	Root mean square error	17360		17361		17361	

Table 4.—Model 2 Results

Line no.	Variables	Model 2.A		Model 2.B		Model 2.C	
		Parameter estimates	t-statistics	Parameter estimates	t-statistics	Parameter estimates	t-statistics
1	Intercept	21182.00	8.70	19453.00	7.86	19375.00	7.81
2	Race			4691.82	3.56	5000.33	3.42
3	Gender	2452.04	3.50	2611.72	3.73	2621.75	3.74
4	Mother's education	1322.78	1.72	1156.56	1.50	1179.93	1.53
5	Father's education	-1136.47	-1.61	-995.78	-1.41	-1010.30	-1.43
6	Family income	0.00	0.07	0.00	0.36	0.00	0.34
7	HBCU					-902.05	-0.49
8	GPA	10.99	1.55	14.70	2.06	14.94	2.09
9	Some formal training beyond first degree	1288.86	0.80	1604.74	1.00	1591.98	0.99
10	Second Bachelor's degree	197.55	0.15	242.18	0.18	248.12	0.19
11	Master's degree	2243.00	2.61	2293.44	2.68	2283.81	2.67
12	Professional or doctoral degree	-2092.59	-0.66	-1823.96	-0.58	-1838.69	-0.58
13	Region	-1330.95	-1.85	-1680.39	-2.32	-1659.72	-2.28
14	Employment status	-11014.00	-13.76	-10970.00	-13.75	-10973.00	-13.75
15	Multiple jobs	-2366.30	-2.74	-2321.67	-2.70	-2309.07	-2.68
16	Placement / job in degree field	2301.81	3.09	2346.28	3.16	2366.69	3.18
17	Experience	0.40	0.19	0.20	0.10	0.17	0.08
18	Education major	-696.77	-0.96	-390.51	-0.53	-389.22	-0.53
19	Adjusted R-square	0.1300		0.1359		0.1355	
20	N	1719		1719		1719	
21	F-statistic	18.13		17.90		16.85	
22	Root mean square error	12599		12556		12559	

Table 5A.—Model 3 Results

Line no.	Variables	Model 3.1.A		Model 3.1.C	
		Parameter estimates	t-statistics	Parameter estimates	t-statistics
1	Intercept	17693.00	7.59	17817.00	7.62
2	Race				
3	Gender	1713.94	2.62	1672.09	2.55
4	Mother's education	1382.53	1.98	1353.81	1.94
5	Father's education	-983.28	-1.53	-931.86	-1.44
6	Family income	0.00	0.43	0.00	0.43
7	Graduated from or attended an HBCU			1680.76	0.76
8	GPA	18.01	2.71	17.55	2.63
9	Some formal training beyond first degree	1991.44	1.36	2017.08	1.37
10	Second Bachelor's degree	264.76	0.22	277.49	0.23
11	Master's degree	2293.34	2.93	2319.91	2.96
12	Professional or doctoral degree	-1244.99	-0.44	-1238.03	-0.44
13	Region	-906.65	-1.36	-915.10	-1.37
14	Employment status	-10651.00	-14.29	-10642.00	-14.27
15	Multiple jobs	-2172.27	-2.83	-2185.14	-2.84
16	Placement / job in degree field	2472.39	3.51	2460.58	3.49
17	Experience	3.23	1.63	3.19	1.61
18	Education major	-1377.25	-2.05	-1361.90	-2.03
19	Adjusted R-square	0.1742		0.1740	
20	N	1405		1405	
21	F-statistic	20.76		19.49	
22	Root mean square error	10522		10524	

Table 5B.—Model 3 Results-cont'd

Line no.	Variables	Model 3.2.A		Model 3.2.C	
		Parameter estimates	t-statistics	Parameter estimates	t-statistics
1	Intercept	34949.00	5.36	34936.00	5.33
2	Race				
3	Gender	6416.96	3.06	6227.78	2.89
4	Mother's education	-212.31	-0.06	-71.09	-0.02
5	Father's education	308.64	0.10	418.89	0.13
6	Family income	-0.01	-0.34	-0.01	-0.40
7	HBCU			-896.88	-0.45
8	GPA	-18.43	-0.88	-17.53	-0.83
9	Some formal training beyond first degree				
10	Second Bachelor's degree	-4510.29	-1.18	-4514.41	-1.17
11	Master's degree	4264.73	1.61	4175.40	1.57
12	Professional or doctoral degree				
13	Region	-3425.34	-1.72	-3364.57	-1.67
14	Employment status	-12861.00	-5.03	-12604.00	-4.79
15	Multiple jobs	1775.54	0.62	1888.66	0.65
16	Placement / job in degree field	-1224.42	-0.58	-1123.57	-0.53
17	Experience	3.71	0.62	3.48	0.57
18	Education major	588.79	0.24	664.47	0.27
19	Adjusted R-square	0.2752		0.2669	
20	N	83		83	
21	F-statistic	3.42		3.16	
22	Root mean square error	8009		8055	