

Have The Returns to Attending A Black College Declined?

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Abstract

This paper considers the returns to attending a Historically Black College/University (HBCU) across three decades. With data from the National Survey of Black Americans, we use matching estimators to determine the treatment effect of HBCU attendance and graduation on a broad measure of labor market outcomes, and two psychological outcomes. We find that the treatment effect of HBCU attendance and graduation are positive with respect to labor market outcomes across three decades, but mixed with respect to black identity and self-esteem. Our results suggest that while HBCUs may not confer psychological advantages, they continue to afford students and graduates relatively superior labor market outcomes.

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I. Motivation

- At least since Constantine (1995), Historically Black Colleges & Universities (HBCUs) have been viewed analytically as labor market interventions that presumably impact the wages of graduates. In this context, Constantine (1995) found for example that relative to graduates of non-HBCUs, the wages of HBCUs graduates were higher.
- In a forthcoming paper, Mills and Mykerezzi (2007) find that HBCU attendance has no impact on the relative earnings of black females, it does have a positive impact on the relative earnings of black males over time.
- Recently Fryer and Greenstone (2007) find that while the relative earnings of HBCU graduates were positive in the 1970s, by the 1990s the relative earnings premium disappeared—and become negative.
- All of these existing use earnings as the labor market outcome. To the extent that HBCU graduates are more likely to pursue post-graduate careers in the public, social, and faith sectors of society, and particularly in jobs that are prestigious (e.g, clergyman, nonprofit managers,) earnings measurements may provide a downwardly biased measure of labor market success.
- Following Darity, Dietrich, and Guilkey (2001), we estimate the effects of HBCU attendance across three decades using a broader measure of labor market outcomes—the Duncan Score.
- We also utilize a data set that is more representative of the U.S. black American population than the data upon which existing studies of the effects of attending HBCUs are based on—the National Survey of Black Americans (NSBA).
- Econometrically, we use semi-parametric matching estimators to estimate the treatment effect of both HBCU attendance and graduation, on labor market success and two psychological outcomes.

II. Methodology: Matching on the Propensity Score

We adopt the potential outcomes approach (Imbens, 2004) to evaluate the impact of attending an HBCU. Given random observations on college attendees/graduates indexed by $i = 1, \dots, N$, each observation is characterized by a pair of potential outcomes, $Y_i(0)$ for the outcome under the control treatment, and $Y_i(1)$ for the outcome under the treatment. Each unit is exposed to a single treatment W such that:

$$Y_i = Y_i(W_i) = \begin{cases} Y_i(0) & \text{if } W_i = 0 \\ Y_i(1) & \text{if } W_i = 1 \end{cases}$$

A matching estimator imputes the missing outcomes by comparing treated units with those who are comparable, but did not receive the treatment. Comparability of control units is measured by similarity in characteristics—ideally pretreatment characteristics—as captured in a general distance metric. Following Imbens (2004) for a sample characterized by (Y_i, X_i, W_i) , where X_i is a covariate measuring a characteristic, the imputed potential outcomes can be expressed as:

$$\hat{Y}_i(0) = \begin{cases} Y_i & \text{if } W_i = 0 \\ \frac{1}{M} \sum_{j \in l_{m(i)}} Y_j & \text{if } W_i = 1 \end{cases}$$

and

$$\hat{Y}_i(1) = \begin{cases} \frac{1}{M} \sum_{j \in l_{m(i)}} Y_j & \text{if } W_i = 0 \\ Y_i & \text{if } W_i = 1 \end{cases}$$

where l_{mi} is an index l for $W_l \neq W_i$ that satisfies:

$$\sum_{j|W_j \neq W_i} 1[\|X_j - X_i\| \leq \|X_l - X_i\|] = m$$

The indicator function $l(\cdot)$ equals 1 if the expression above is true and 0 otherwise. In general, the index chooses an observation in the opposite treatment group that is the m^{th} closest with respect to the distance norm $\|\cdot\|$.

For a sample of N observations with N_1 treated and N_0 controls, matching estimator for the population average treatment effect (Abadie et al., 2001) is:

$$\tau^P = \frac{1}{N} \sum_{i=1}^N [\hat{Y}_i(1) - \hat{Y}_i(0)]$$

As τ^P is the treatment effect for a randomly assigned member of the population, it may be a biased measure of the treatment effect if the treatment is targeted toward particular individuals. As such, the population treatment effect on those actually treated is:

$$\tau_T^P = \frac{1}{N_1} \sum_{i:W_i=1} [\hat{Y}_i(1) - \hat{Y}_i(0)]$$

If assignment to the treatment is independent of the outcomes, then conditional on the X_i , τ^P and τ_T^P are identified. If we further assume that conditional on the covariates, the probability of assignment to the treatment is bounded away from zero and one (Abadie et al., 2001), then it is feasible to define the matching index on the probability of receiving the treatment—or the propensity score—the approach we adopt.

III. Some Results

Our data is the National Survey of Black Americans (NSBA), a nationally representative survey of approximately 2,100 black Americans age 18 years and older in four waves: 1979 - 1980, 1987 -

1988, 1988 - 1989, and 1992. We report results on the treatment effect of attending and graduating from an HBCU on the respondent's Duncan Score—a broad measure of labor market outcomes, and two psychological outcomes: black identity and self-esteem.

- We match on the basis of an estimated propensity score that determines the probability of selection into an HBCU in four cases: 1.) The probability of attending an HBCU, 2.) The probability of graduating from an HBCU, 3.) The probability of attending a select HBCU, and 4.) The probability of graduating from a selective HBCU.
- An HBCU is considered selective if the respondent attended or graduated from Hampton, Howard, Morehouse, Spelman or Xavier.
- The propensity score—the probability of attending/graduating from an HBCU—is estimated from a Probit specification where the decision is a function of pretreatment characteristics of the respondent. These characteristics include place of birth, birth year, gender, the racial characteristics of the town and region in which the respondent grew up, racial characteristics of the respondent's K-12 school environment, parent's education, and skin tone.

In Tables 1 and 2 we report some preliminary results on the labor market treatment effect of graduating from HBCUs and selective HBCUs.

- The results in Table 1 show that HBCU graduates realized higher labor market returns relative to their black peers that graduated from non-HBCUs in all three decades as measured by both the average treatment effect (τ^P), and the average treatment effect on the treated (τ_T^P)
- The results in Table 2 that selective HBCU graduates realized higher labor market returns relative to their black peers that graduated from non-HBCUs as measured by the average treatment effect. With respect to those who actually received the treatment (e.g. graduated from a selective HBCU) the higher labor market returns were only relevant in the decade of the 1990s.

IV. Conclusions

Our preliminary results suggest that the labor market returns to attending an HBCU continued to be positive through the decade of the 1990s. In contrast to the findings of Fryer and Greenstone (2007), our broader measure of labor market outcomes—the Duncan score—suggest that relative to non-HBCU graduates, the graduates of HBCUs fare better in terms of securing employment with status and prestige. As the Duncan score captures both status and prestige, results based on earnings are narrow, and introduces a bias when jobs have high earnings but low status.

Although not reported here, we also consider whether HBCUs confer other relative advantages on its graduates other than labor market success. The NSBA for example reports for each respondent a measure of self-esteem and black identity. Perhaps surprisingly, we find that attending/graduating from an HBCU has no effect on either of these psychological outcomes. We conclude that this may be a result of the nurturing and nonhostile environment at HBCUs.

Our estimates of the treatment effect are identified if assignment to the treatment is uncorrelated with any unobservables—although matching estimates are identified under the assumption of unconfoundedness. To address this explicitly, our future work will estimate treatment effects in a “regression on propensity score blocks framework”. This will allow us to see how sensitive our semi-parametric estimates of the treatment effect are to specifications that allow for unobserved heterogeneity—or selection on unobservables.

Table 1
Population Average Treatment Effect
Labor Market Outcomes: HBCU Graduation

| <i>Time period:</i> | <i>1992</i> | <i>1989 - 1989</i> | <i>1987 - 1988</i> | <i>1979 - 1980</i> |
|--------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Treatment Effect: | | | | |
| τ^P : | .689 (.135) ^a | .665 (.125) ^a | .162 (.159) | .298 (.152) ^b |
| τ_T^P : | .277 (.155) ^c | .412 (.147) ^b | .219 (.099) ^a | .324 (.061) ^a |
| Number of Observations: | 399 | 485 | 833 | 1922 |
| Number of Matches: | 4 | 4 | 4 | 4 |

NOTES:

Sample sizes vary as a result of attrition and missing variables

All estimates are weighted by the respondent nonresponse weight

Standard errors are in parentheses.

^a Significant at the .01 level.

^b Significant at the .05 level.

^c Significant at the .10 level.

Table 2
Population Average Treatment Effect
Labor Market Outcomes: Selective HBCU Graduation

| <i>Time period:</i> | <i>1992</i> | <i>1988 - 1989</i> | <i>1987 - 1988</i> | <i>1979 - 1980</i> |
|--------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Treatment Effect: | | | | |
| τ^P : | .805 (.361) ^b | .674 (.410) ^c | .479 (.285) ^c | .723 (.313) ^b |
| τ_T^P : | .905 (.416) ^b | .224 (.269) | .338 (.239) | .341 (.214) |
| Number of Observations: | 413 | 485 | 833 | 615 |
| Number of Matches: | 4 | 4 | 4 | 4 |

NOTES:

Sample sizes vary as a result of attrition and missing variables

All estimates are weighted by the respondent nonresponse weight

Standard errors are in parentheses.

^a Significant at the .01 level.

^b Significant at the .05 level.

^c Significant at the .10 level.

References

Abadie, Albert, David Drukker, Jane Leber Herr and Guido W. Imbens. 2001. "Implementing Matching Estimators for Average Treatment Effects in Stata", *The Stata Journal*, 1: pp. 1 - 18

Constantine, Jill. 1995. "The Effect of Attending Historically Black Colleges and Universities on Future on Future Wages of Black Students", *Industrial and Labor Relations Review*, 48: pp. 531 - 546.

Darity, William A., Jason Dietrich, and David K. Guilkey. 2001 "Persistent Advantage or Disadvantage?: Evidence in Support of the Intergenerational Drag Hypothesis", *American Journal of Economics and Sociology*, 60: pp. 435 - 470.

Fryer, Roland G. and Michael Greenstone. 2007. "The Causes and Consequences of Attending Historically Black Colleges and Universities", Working Paper # 13036, National Bureau of Economic Research, Cambridge MA.

Imbens, Guido. 2004. "Nonparametric Estimation of Average Treatment Effects Under Exogeneity: A Review", *Review of Economics and Statistics*, 86: pp. 4 - 29.

Jackson, James S., and Gerald Gurin. National Survey of Black Americans, Waves 1 -4 1979 - 1980, 1987 - 1988, 1988 - 1989, 1992 [Computer File] Conducted by University of Michigan, Survey Research Center. ICPSR version Ann Arbor MI: Inter-University Consortium for Political and Social Research [producer and distributor], 1997.

Mills, Bradford and Elton Mykerezi. (Forthcoming) 2007. "The Wage Earnings Impact of Historically Black Colleges and Universities", *Southern Economic Journal*.