Chapter 11
HBCUs:
Efficiencies of Creating a Scientific Workforce Outta Fifteen Cents

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ABSTRACT

Using data from the Integrated Postsecondary Educational Data System (IPEDS) and the NSF Awards Database, this study generates productivity per dollar invested (PDI) by the National Science Foundation (NSF) to support the creation of scientific research and undergraduate science and engineering scholars. The PDI is comprised of three components 1) faculty development; 2) undergraduate development; and 3) organizational development. The PDI is a metric for how efficient HBCUs and non-HBCUs are at using grant dollars to produce undergraduate science and engineering degrees. There is no statistical difference between the PDI for HBCUs and non-HBCUs. However given the difference in average grant funding, HBCUs produce more undergraduate scientists more efficiently.

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BACKGROUND

The disparate treatment of black colleges dates back to 1862 with the establishment of the Morrill Act, which authorized the creation of land grant colleges. The land grant system of education has essentially four major areas of operation: resident instruction, military training, extension service, and research and experimentation. The Second Morrill Act of 1980 provided access to a land grant education for blacks, but also sanctioned the "separate but equal" doctrine with respect to higher education. The Second Morrill Act states,

Provided, that no money shall be paid out under this act to any State or Territory for the support and maintenance of a college, where a distinction of race or color is made in the admission of students, but the establishment and maintenance of such colleges separately for white and colored students shall be held to be a compliance with the provisions of this act, if the funds received in the State or Territory be equitably divided as herein- after set forth (Brunner, 1966, p. 69)

The Secretary of the Interior suggested that states allocate funds based on the percentage of black and white students in each state's public school population.[1] This funding formula was also used in the allocation of the Nelson Amendment of 1907 for resident instruction in agriculture and mechanic arts. This funding formula suggests that the cost of equal educational opportunity is a function of the number of students and fails to account for the additional expenses associated with natural and physical sciences and engineering instruction.

By the late 1920s, blacks constituted 23% of the population; hence, black land grants received 23% of the 1.5 million of the Morrill-Nelson funds allocated to the 17 border and segregationist states (Kujovich, 1993-1994). Kujovich states,

Unequal resources and racial isolation dominated black public higher education from its beginnings in the 1870s to the Supreme Court's decision in Brown v. Board of Education…Between the enactment of the Second Morrill Act in 1890 and the NAACP's successful challenge to separate but equal in the 1940s, black public colleges suffered substantial, consistent, and nearly universal discrimination in funding. The gross disparity in the allocation of public funds is most clearly evident in the land grant colleges; the main stays of the black system. (p. 76)

The funding inequities were not limited to resident instruction, but were also present in the allocation of funding for research and cooperative extension. Cooperative