

Tests of Fiscal Discrimination in Higher Education Finance: Funding Historically Black Colleges and Universities

BY THOMAS SAV

INTRODUCTION

Since the landmark 1896 Supreme Court decision in *Plessy v. Ferguson* and the subsequent widespread formation of a racially separate provision of public higher education for blacks, the courts have had to struggle with the issue of black-white higher education equality. Litigation has taken a variety of forms and has involved numerous aspects of educational equality. However, a constant theme running throughout the decades of litigation has focused on the disparate funding of publicly controlled black colleges and universities compared to their white counterparts.

Initially, the public black colleges and universities that emerged under the Supreme Court's "separate-but-equal" sanction in *Plessy v. Ferguson* were anything but equal to public white institutions. Beginning in the early 1900's, studies cataloged these inequalities with respect to facilities, equipment, libraries, academic programs, and financial support.¹ As a result, a series of lawsuits beginning in the 1930's managed to partially open blacks' access to graduate education at white institutions. But the court rulings did little to remove the financial inequalities between black and white colleges and universities in the dual systems of higher education that existed in eleven southern states and six of bordering states.² Even in

1. U.S. Department of the Interior, Bureau of Education, *A Study of the Private and Higher Education Schools* (Washington, D.C.: 1916).

2. The eleven Southern States include: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. The bordering states include Delaware, Kentucky, Maryland, Missouri, Oklahoma, and West Virginia.

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the post *Brown v. Board of Education* (1954) and the Civil Rights Act of 1964 eras, *de facto* segregation remained significantly intact as higher education, in large part, escaped many of the desegregation mandates. In the 1970' and 1980's additional lawsuits were filed against Title VI violating states as fiscal discrimination in the allocation of state funds continued to be a factor in the treatment of public black colleges and universities.³

Despite the funding disparities, these historically black colleges and universities survived and continue to provide unique educational opportunities for blacks. Some have changed dramatically in the student bodies that they serve and perhaps in their historical missions. For example, in four states, these colleges no longer report a majority black student enrollment.⁴ In other states, however, black enrollments average eighty-five percent and historically black colleges continue to provide a necessary or preferred access for blacks' higher education. Yet, on many counts they appear to still experience financial difficulty. And that difficulty has continued to give rise to the issue of possible unequal funding flowing from state coffers to historically black relative to predominately white public colleges and universities.

The objective of this paper is to examine and empirically test for the potential existence of fiscal discrimination leading to disparate funding treatment of historically black colleges and universities. To do so, we first employ a methodology that assumes a fairly rigid funding mechanism applied to all higher education institutions based on specific institutional characteristics and production outcomes, but allows some flexibility in awarding discretionary dollars that potentially leads to unequal funding conditions. Second, we amend that assumption to allow for possible differences in all aspects of the funding mechanism as applied separately to historically black versus predominately white institutions. As a result, funding differences are decomposed into differences due to institutional characteristics and differences due to differential treatment. The empirical estimates suggest that a fund-

3. For an excellent review of the history and litigation pertaining to historical black colleges and universities see: United States Commission on Civil Rights, *Black-White Colleges: Dismantling the Dual System of Higher Education*, (Washington, D.C.: Clearing House Publication 66, 1981). For an update of the continuing litigation see A'Lelis Robinson Henry, "Perpetuating Inequality: *Plessy v. Ferguson* and the Dilemma of Black Access to Public Higher Education," *Journal of Law and Education* 8 (1998): 47-71 and M. Christopher Brown, "Public Black Colleges and Desegregation in the United States: A Continuing Dilemma," *Higher Education Policy* 12, (1999): 15-25.

4. The four states are Kentucky, Missouri, Okalahoma, and West Virginia and will, therefore, be excluded from the empirical analysis to follow in this paper.

ing redistribution would be required to move historically black institutions toward financial equality with their predominately white counterparts. However, the estimates also offer caution in the sense that such redistribution carries additional implications that may marginally harm historically black colleges and universities with respect to specific funding targets that they have had to rely on due, perhaps, to past patterns of discriminatory funding.

METHODOLOGY

In an attempt to capture the existence of any possible funding disparity between predominately white and historically black public colleges and universities, we begin by assuming that the allocation of state funds to individual institutions is based, at least in part, on a set of formal rules tying funding levels to specified production outcomes and other institutional measures. In addition, it is assumed that there tends to be inherent funding flexibilities that provide more discretionary monies for allocation by state agencies and their bureaucrats that are more subject to political influence. If the latter is hypothesized to produce a differential funding of historically black compared to predominately white colleges and universities, then empirical tests could be performed via a dummy variable specification:

$$(1) \quad STATEFUND = X\beta + HBCU + \varepsilon$$

where state funding (*STATEFUND*) annually awarded to institutions depends on specific funding measures (*X*) such as credit hour production, graduate program offerings, physical plant size, etc., including an autonomous or discretionary funding component captured in an intercept term, and potentially whether or not the institution is a historically black college or university (*HBCU*).⁵

5. The dependant variable is specified as a total dollar state funding rather than, e.g., a state funding per total FTE. Utilizing such a FTE measure would severely bias the results due to the fact that it would aggregate undergraduate and graduate FTE, whereas in practice state funding subsidies universally differ for undergraduate FTE and graduate FTE production. In addition, the funding specification employed in the present methodology and empirical implementation follows the convention used throughout the recent research literature focusing on the cost structure of universities and utilizing a total cost rather than a cost per FTE measure as the appropriate dependent variable. See for example, Elchanan Cohn, Sherrie L. W. Rhine, and Maria C. Santos, "Institutions of Higher Education as Multi-Product Firms: Economies of Scale and Scope," *Review of Economics and Statistics* 71, no. 2 (1989): 284-290 and Rajindar Koshal and Manjulika Koshal, "Economies of Scale and Scope in Higher Education: A Case of Comprehensive Universities," *Economics of Education Review* 18 (1999): 269-277.

While the above may be useful in incorporating and testing for the existence of possible funding differentials, it is restrictive in assuming that any funding disparities between predominately white and historically black institutions are constant and independent of other institutional characteristics. It thereby, implicitly assumes that all marginal funding effects (b) are identical for predominately white and historically black institutions and that any existence of disparities would only be captured as a shift parameter in a different intercept term. The common approach for overcoming this problem follows the seminal works of Blinder (1973) and Oaxaca (1973).⁶ Where a minority group is hypothesized to be treated differently than the majority group with respect to traits, characteristics, endowments, etc., separate group equations rather than a single combined dummy variable equation are estimated. Any differential treatment is then captured in the both the marginal effects and the intercepts. The results are used to decompose any differential treatment into parts that are due to, say, legitimate differences and parts that are due to discrimination.

Employing this latter method in the present framework, if differential funding treatment potentially exists in any or all aspects of the funding mechanism, then it would be appropriate to specify separate group funding equations with both intercept and slope coefficients differing for predominately white (PW) and historically black (HB) institutions:

$$(2) \quad STATEFUND^{PW} = X^{PW} \beta^{PW} + \varepsilon^{PW}$$

$$(3) \quad STATEFUND^{HB} = X^{HB} \beta^{HB} + \varepsilon^{HB}$$

where the same set of funding measures (X) apply to each group.

Upon empirical estimation of the separate PW and HB funding equations, variations in funding between groups may be decomposed into separate components or effects as follows:

$$(4) \quad \overline{STATEFUND}^{PW} - \overline{STATEFUND}^{HB} = (\bar{X}^{PW} - \bar{X}^{HB}) \hat{\beta}^{PW} + (\hat{\beta}^{PW} - \hat{\beta}^{HB}) \bar{X}^{HB}$$

where bars “-” and hats “^” denote variable means and estimated coefficients, respectively, for each group. Thus, the mean difference in state funding between predominately white and historically black institutions is decomposed into differences due to the effects of institutional characteristics (the first term on the right of equation 4) and

6. Alan S. Blinder, “Wage Discrimination: Reduced Form and Structural Estimates,” *Journal of Human Resources* 18, no. 3 (1973): 436-455 and Ronald Oaxaca, “Male Female Wage Differentials in Urban Labor Markets,” *International Economic Review* 14, no. 3 (1973): 693-709. For an overview of the Blinder and Oaxaca methods and other econometric methods employed in measuring discrimination see Ernst R. Berndt, *The Practice of Econometrics: Classic and Contemporary*, (Chapter 5: Analyzing Determinants of Wages and Measuring Wage Discrimination,” (Massachusetts: Addison-Wesley, 1991).

differences due to the effects of differential funding treatment (the second term on the right of equation 6). The former is determined by the mean differences in institutional characteristics weighted by the estimated coefficients of the advantaged or dominant group, viz., predominately white colleges and universities. That is, it evaluates the mean difference in state funding when historically black institutions, based on their institutional characteristics and productivity, receive the same funding or subsidy rates as predominately white institutions. In comparison, the differential treatment effect is determined by the differences in the estimated coefficients weighted by the mean characteristics of the potentially disadvantaged group, historically black colleges and universities. Since this term is the potentially higher funding or subsidy rate received by predominately white institutions compared to historically black institutions for the same characteristics and productivity, it is a conventional measure of discrimination.

In the empirical analysis of this paper, both the dummy variable single equation and the separate group equations will be estimated so as to provide as much insight as possible. However, the latter will give way to the former as the main empirical focus. The reason is that it is much less restrictive, it has been used in the substantial body of literature assessing the effects of discrimination between so-called advantaged and disadvantaged groups, including black-white and male-female wage differentials, and via the decomposition it allows for a deeper investigation of possible differential funding treatments.

DATA

Complete empirical specification and implementation of our methodology is, as usual, constrained by the availability and nature of the data. In the present study, that pertains to financial and institutional characteristics data available from the United States Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS). The raw IPEDS data files for the 1995 Finance Survey and the 1994-95, 1995-96, and 1996-97 Institutional Characteristics Surveys were merged to construct a complete financial and characteristics profile for individual publicly controlled, state supported, four-year degree and above granting universities and colleges.⁷ The data

7. United States Department of Education, National Center for Education Statistics, *Integrated Postsecondary Education Data System, Finance Survey FY 1995 and Institutional Characteristics Survey 1994-95, 1995-96, and 1996-97* (Washington, D.C.). Enrollment data contained in the Characteristics Survey are reported in off years in comparison to the Finance Survey. Therefore, in the empirical analysis we use specific institutional characteristics from the 1995-96 institutional survey to match the 1995 finance survey, but average the 1994-95 and 1996-97 enrollment data from the institutional characteristics surveys to proxy enrollment data for 1995-96 academic year.

were culled so as to focus on institutions residing in states that house publicly supported historically black colleges and universities. Specialized institutions such as medical colleges, textile centers, and health sciences institutes were excluded. The process produced a final data set comprised of 29 historically black colleges and universities and 135 predominately white institutions in 13 different states.⁸

Simultaneously, we draw upon the current body of literature investigating both the revenue and cost structure of the higher education industry and incorporate a public choice framework to capture the effects of institutional differences in the dependence on and ability to draw upon various sources of finance.⁹

The dependent variable, *STATEFUND*, is constructed to include all state funding allocated to individual institutions during the fiscal year. It includes both state appropriations via acts of a legislative body and any grants or contracts received as revenues through State channels. This total measure of state funding is posited to vary depending upon specific funding measures related to institutional production, institutional characteristics, and potential external influences placed on the funding process. The set of explanatory variables (*X*) constructed to anchor the latter is as follows:

- UNDERGRAD* = total undergraduate credit hour production
- GRADPRO* = total graduate and professional credit hour production
- TUITION* = percent of total revenues produced from tuition charges
- PRIVATE* = yield from private endowments
- CORPORATE* = corporate giving for funding of intercollegiate athletics
- FEDERAL* = revenues received through federal channels
- AUXILIARY* = revenues generated from auxiliary enterprise operations
- ASSETS* = physical plant assets

where all appropriations, grants, gifts, endowments, etc, exclude monies related to the operation of a hospital.

Incorporated here is the usual notion that state funding is tied to some type of instructional output that differs by undergraduate and graduate program levels. Each are proxied by the annual production

8. Institutions in four states are dropped for the reasons noted above: Kentucky, Missouri, Oklahoma, and West Virginia. In addition, institutions for which missing or unreported data precluded analysis were not included in the final data set.

9. For example, see Hans de Groot, Walter W. McMahon, and J. Fredericks, "The Cost Structure of American Universities," *The Review of Economics and Statistics* 73, no.3 (1991): 424-431, and United States General Accounting Office, *Higher Education: Tuition Increases and Colleges' Efforts to Contain Costs* (Washington, D.C.: GAO/HEHS-98-227, 1998). Regarding the public choice aspects, refer to Elizabeth Becker and Cotton M. Lindsay, "Does the Government Free Ride," *Journal of Law and Economics* 37, no. 1 (1994): 277-296 and Burton A. Weisbrod, *The Nonprofit Economy* (Cambridge: Harvard University Press, 1988).

of student credit hours, including professional programs in the graduate output measure, and equalized to account for differences in academic calendar systems.¹⁰ In both cases, one would expect greater state funding to follow greater *UNDERGRAD* and *GRADPRO*.

In a different vein, the theory of government enterprise maintains that institutional differences in the dependence on various sources of revenue give rise to systematic differences in behavior and, therefore, input-output mixes. Within the nonprofit publicly supported higher education sector, empirical tests lend support to the notion that university managers behave differently and allocate university resources differently when the institution is more as opposed to less dependent on direct market sales, i.e., tuition revenue.¹¹ For example, the greater the proportion of institutional revenues one can generate from tuition charges, the fewer internal resources one need devote to husband appropriations from state supported dollars. As a result, in the above, *TUITION* would be expected to have a negative effect on state funding.¹²

Along similar lines, the state political machinery responds to pleasing their constituents and, in particular, powerful constituents and groups that are influential in the vote gathering process. Elected officials and their bureaucratic appointees who control the disbursement of monies are subject to capture by such groups and can be predicted to support like causes. Private and corporate giving is a visible measure of support flowing from constituents in support of specific causes or institutions. Hence, one would expect greater monetary support from the state coffers to follow suit with greater private and corporate giving.

In the present structure of state funding, the endowment asset yield measuring the accumulation of private giving (*PRIVATE*) and corporate funding of intercollegiate sports (*CORPORATE*) can be expected to positively influence state funding decisions. Yet, re-

10. In this case, for institutions operating on a quarter system, credit hours were converted to a semester basis using the two-thirds conversion factor.

11. The notion that the differences in the mix of revenue sources gives rise to systematic differences in the input-output of higher education institutions is empirically supported by, among others, David Sisk, "A Theory of Government Enterprise: Ph.D. Production," *Public Choice* 37 (1981): 357-363 and G. Thomas Sav, "Institutional Structure, Finance, and Race in Higher Education: Public-Private Sectoral Differences," *Public Choice* 55 (1987): 257-264

12. One may also argue that causation works in the opposite direction and that decreases in state funding drives up tuition dependence as a revenue source. However, counter to this is the observation that in the decade of the 70's when state funding of higher education was not an issue, real tuition was also increasing. In addition, in the 90's when state funding was on the downturn, some states imposed annual tuition caps on their public institutions.

cent trends have imposed new managerial constraints that act as opposing forces. The widespread tightening of state budgets with a strong legislative focus on higher education have simultaneously forced universities and colleges to seek out and attempt to substitute other funding sources, especially private giving, for state supported dollars. Thus, a priori, the overall effect, at least with respect to private giving (*PRIVATE*), is much less certain and must remain an empirical issue to be tested here.

An equally difficult issue arises with regard to the effect of external financial support via the federal government. This aspect of financial support is measured as revenues received through federal channels (*FEDERAL*), including grants and contracts for research and training programs. Given significant declines in federal funding, state funding may serve as a partial substitute. On the other hand, e.g., in the case of matching grants, state and federal funding may be partially complementary to one another. Hence, as with the above, the overall effect must remain an empirical issue.

Auxiliary enterprises exist on campuses for the purpose of providing services to students and many times the general public, e.g., dormitories, intercollegiate athletics, and arenas. And while those enterprises generate revenues through separate fee charges, in some cases the fees are levied below the cost of service and the difference subsidized through the state funding mechanism. In other cases, such enterprises may produce entertainment as well as educational goods and services that are that are highly valued by the external community and therefore elicit direct or indirect state funding support. In either case, it is expected that a larger auxiliary enterprise presence, as measured by the revenues generated from such (*AUXILIARY*), tend to elicit more state funding dollars.

As the final determinant of state funding we include a measure of the size of campus facilities as defined by an institution's physical plant assets or the current replacement value of buildings (*ASSETS*). Presumably, larger physical plants require and receive more funding.

EMPIRICAL RESULTS

The variable means and standard deviations for the predominately white and historically black groups of colleges and universities are presented in Table 1. While on average predominately white compared to historically black institutions receive greater state funding, they are on average larger institutions on all counts, including undergraduate and graduate credit hour production and physical plant size. Similarly, predominately white institutions are somewhat more dependent on tuition revenue as a relative source of revenue

and on average receive more philanthropic dollars, corporate athletic funding, federal monies, and generate more auxiliary enterprise revenue. However, as may be expected, predominately white institutions as a whole exhibit relatively greater variation with respect to all measures and, therefore, are a more heterogeneous group relative to historically black colleges and universities.

TABLE 1
 PREDOMINATELY WHITE AND HISTORICALLY BLACK COLLEGES AND UNIVERSITIES GROUP
 MEANS AND STANDARD DEVIATIONS

Variable Description	Variable Symbol	Predominately white		Historical
		Mean	Std. Dev.	Mean
State Funding, \$1,000,000	STATEFUND	63.41	78.43	24.11
Undergraduate Credit Hours, 10,000	UNDERGRA	25.57	19.49	13.52
Graduate and Professional Credit Hours, 1,000	GRADPRO	42.41	52.41	11.54
Tuition Revenue as % of Total Revenue	TUITION	23.41	7.57	19.12
Private Endowment, \$1,000,000	PRIVATE	3.12	21.01	0.09
Corporate Funding Athletics, \$1,000,000	CORPORATE	0.87	4.11	0.01
Federal Grants and Contracts, \$1,000,000	FEDERAL	15.80	32.48	8.43
Auxiliary Enterprise Revenue, \$1,000,000	AUXILIARY	20.06	27.78	7.65
Physical Plant Assets, \$1,000,000	ASSETS	234.26	352.07	87.90
N Observation		135		29

Table 2 presents the regression results, first restricting the coefficients of the funding determinants to equality in the combined dummy variable model and second estimating separate funding equations for

each group.¹³ In the combined dummy variable regression all of the predicted coefficients carry the expected sign. With respect to the empirical issues, private giving appears to act as a substitute to state funding, while corporate and federal dollars appear as complementary. The model performs quite well with 94 percent of the state funding variation being explained at better than the 1 percent level of significance.

TABLE 2
STATE FUNDING REGRESSIONS: COMBINED AND SEPARATE PREDOMINATELY WHITE AND HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

Independent Variable	Combined White-Black		Predominately White		Historically Black
	β_1 (s β)	α^*	β_1 (s β)	α^*	β_1 (s β)
INTERCEPT	1.99 (0.619)	1%	2.012 (0.716)	1%	1.434 (0.438)
UNDERGRA	0.154 (0.016)	1%	0.160 (0.017)	1%	0.017 (0.029)
GRADPRO	0.023 (0.007)	1%	0.022 (0.007)	1%	0.043 (0.018)
TUITION	-0.115 (0.022)	1%	-0.119 (0.026)	1%	-0.054 (0.022)
PRIVATE	-0.047 (0.010)	1%	-0.048 (0.010)	1%	-0.675 (0.558)
CORPORATE	0.275 (0.048)	1%	0.273 (0.053)	1%	0.193 (4.33)
FEDERAL	0.061 (0.013)	1%	0.064 (0.014)	1%	0.074 (0.027)
AUXILIARY	0.024 (0.012)	5%	0.022 (0.013)	10%	0.052 (0.038)
ASSETS	0.003 (0.001)	2%	0.002 (0.001)	6%	0.004 (0.001)
HBCU	-0.643 (0.413)	12%			
N Observations	164		135		29
Probability>F Value	0.001		0.001		0.001
Adjusted R2	0.94		0.94		0.8

*a=minimum level of significance or better for a two-tailed test.

13. Tests were performed for multicollinearity using the condition index approach developed by D.A. Belsley, E. Kuh, and R.E. Welsch, *Regression Diagnostics, Identifying Influential Data and Sources of Collinearity* (New York: Wiley, 1980). The recommended numerical "danger" level for a condition index is 20 to 30. The present tests revealed that the highest condition index for the predominately white group regression and for the dummy variable regression was approximately 13. For the historically black group regression, the highest condition index was approximately 15.

Of course, the main focus does reside in the single measure of the presence or absence of differential funding treatment as empirically confined to the *HBCU* dummy variable. Controlling for other funding determinants, the negative effect of *HBCU* suggests that historically black relative to predominately white institutions receive less state supported dollars. And while on a two-tailed test the *HBCU* coefficient is statistically significant at only the 12 percent level, the notion of fiscal discrimination in the allocation of state monies to HBCUs is somewhat better supported at the 6 percent (one-tailed test) level of significance but still not reaching the usual benchmark. However, the result thus far does stem from the restrictive assumption that any differential funding effect can only empirically appear as a shift parameter in different intercept terms for historically black relative to predominately white institutions. Thus, it does indicate sufficient evidence to warrant further investigation and, subsequently, use of our less restrictive methodology that captures the presence of any differential funding effects in both intercept and slope coefficients for all institutional funding measures.

To that end, Table 2 presents the separate state funding regressions, allowing for all funding effects to vary by group. Overall, the model performs somewhat better in explaining the state funding mechanism for predominately white ($R^2=0.94$) than for the historically black institutions as a group ($R^2=0.80$), but in each is highly significant. In addition, each group's coefficients carry the same sign as in the combined white-black dummy variable regression. In the white group regression, all the independent variables perform reasonably well with six of the eight coefficients being significant at better than the 5 percent level and the remaining two (*AUXILIARY* and *ASSESTS*) at the 10 percent level. In contrast, only four of the eight coefficients remain statistically significant in the separate black group regression.

Consistent with the combined white-black regression result of a negative effect of *HBCU* on state funding, the separate group regressions further support the notion that there is some autonomous or discretionary level of funding differential tending to favor predominately white ($b_0=2.011$) over historically black ($b_0=1.434$) institutions. Based on the current estimates, that differential is nearly \$0.6 million.

With regard to state funding as determined by specific output measures, predominately white institutions are also awarded more state dollars per undergraduate credit hour produced (*UNDERGRAD*), although the statistical insignificance of the ef-

fect among historically black colleges and universities, surprisingly suggests that funding is at best loosely tied to this visible measure of production. However, the reverse holds at the graduate level as the estimated effect of *GRADPRO* generates greater state funding per credit hour in the historically black sector than in the predominately white sector. Presently, that amounts to a state subsidy of \$43 v. \$22 per credit hour, respectively.

Drawing upon the public choice aspects of our framework, the significant negative effect of *TUITION* among both white and black institutions supports the proposition that the greater the proportion of revenues generated from tuition, the less managerial incentive there may be to allocate internal resources to the task of lobbying for state supported revenue dollars. On an inter-group comparison, the results suggest that for each one percentage point increase in tuition relative to total institutional revenues, there is a greater predominately white compared to historically black reduction in state dollars.

Aside from the differences in statistical significance noted above, the remaining empirical estimates produce somewhat more mixed results. Private philanthropy and corporate funding tend to favor predominately white institutions, while federal funding, auxiliary enterprise operations, and physical plant assets tend to favor historically black institutions. Interestingly, the negative *PRIVATE* effect suggests that private giving is serving as an overall substitute to declining state funding as opposed to supporting the notion that it carries a potential positive effect through influences on the state political machinery. The reverse holds with respect to *FEDERAL*, indicating that state funding is complementary to an institution's ability to generate federal support.

Employing the estimated coefficients obtained from the separate group equations along with the respective mean values of the funding determinants, we turn to the decomposition results presented in Table 3. From the decomposition equation (4), the results are transformed into percentages so that the total funding differential is decomposed into the percentage due to institutional characteristics and the percentage due to differential treatment.

Thus, it is estimated that 83.3 percent of the \$39.3 million average state funding differential between predominately white and historically black institutions is accounted for by differences in institutional characteristics, including credit hour production, dependence on tuition revenue, external funding, auxiliary operations, and physical plant size. The remaining 16.7 percent is estimated to be due to differential treatment in the combined aspects of apply-

TABLE 3
 DECOMPOSITION OF PREDOMINATELY WHITE VS. HISTORICALLY BLACK
 STATE FUNDING DIFFERENCES

	Attributable to Institutional Characteristics %	Attributable to Differential Treatment %
TOTAL FUNDING DIFFERENCE	83.3	16.7
DUE TO:		
UNDERGRAD	49.1	49.3
GRADPRO	17.4	-6.3
TUITION	-13.0	-31.3
PRIVATE	-3.7	1.5
CORPORATE	6.0	0.0
FEDERAL	12.0	-2.1
AUXILIAR	7.0	-5.8
ASSETS	8.5	-3.3
INTERCEPT		14.7

ing and allocating state funding among colleges and universities. Eliminating this differential treatment effect implies a redistribution of state higher education funding that would reduce the average predominately white vs. historically black funding gap by a total of \$6.6 million.¹⁴

However, this total redistribution carries additional implications with respect to specific funding components. In order to examine the implications, Table 3 further subsets the total effect of each of the two decomposition components into their specific funding parts. In each case, the largest effect occurs in funding related to the production of undergraduate credit hours (*UNDERGRAD*). Of the 83.3 percent total funding differential attributable to all institutional characteristics, 49.1 percent is due to the lower production of under-

14. In the present decomposition analysis, funding differences due to characteristics are weighted by the estimated coefficients of predominately white institutions, whereas funding differences due to differential treatment are weighted by the mean characteristics of historically black institutions. This potentially creates an index problem issue because one could argue that the decomposition could be estimated by reversing the weights. Invoking this alternative weighting form, our estimated gross decompositions become: 29.8 percent due to institutional characteristics and 70.2 percent due to differential treatment. And while this lends even stronger support to a historically black under funding hypothesis, one may be hard pressed to postulate this form on the basis that historically black institutions are the dominant group of institutions. Thus, the estimates provided in Table 3, while more conservative, seem to be preferred on empirical grounds.

graduate credit hours by historically black institutions. On the differential treatment side, 49.3 percent of the 16.7 percent funding treatment is estimated to occur with respect to the allocation of state funding based on undergraduate credit hour production. Hence, with respect to state funding based on undergraduate credit hour production, historically black institutions receive fewer dollars due to their characteristic lower production, but also receive less in the differential treatment due to being historically black.

But part of this differential treatment in the state funding mechanism is compensated for by a favorable treatment of historically black relative to predominately white institutions. In addition, similar favorable treatment takes place on the institutional characteristics side. That is, negative values in Table 3 indicate a funding effect that favors historically black over predominately white colleges and universities.

Therefore, in redistributing funding toward equality based on the current estimates, historically black institutions would, while receiving funding augmentations in some areas, have to bear funding cuts in other areas. Specifically, from our current estimates regarding institutional characteristics, they are so-called over funded and would be due budget cuts relative to predominately white institutions with respect to their ability to generate revenues from tuition (*TUITION*) and raise private dollars (*PRIVATE*) to build endowment assets. By the same token, funding due to differential treatment favors historically black colleges and universities in the allocation of funding for graduate credit hour production (*GRADPRO*), tuition revenue (*TUITION*), federal funding (*FEDERAL*), auxiliary enterprise operations (*AUXILIARY*), and physical plant assets (*ASSETS*). However, countering these combined effects is the single *INTERCEPT* effect which suggests that there remains a discretionary level of funding that serves as an unfavorable treatment of historically black institutions.

CONCLUSIONS

The objective of this paper has been to assess and evaluate whether or not and to what extent there remains remnants of fiscal discrimination in the allocation of state funding of public historically black relative to predominately white colleges and universities. The methodology employed in the paper approached the issue from a number of avenues: first restricting funding with regard to specific institutional characteristics and production outcomes to equality for all institutions, but allowing for some level of discretionary funding to vary among institutions and second relaxing this

rigid restriction so as to allow for possible differential funding treatment in all aspects of funding historically black compared to predominately white institutions as separate groups.

Overall, the empirical tests suggest that possible disparities in the funding of historically black colleges and universities could remain a concern. Focusing on the strength of the methodology, the decomposition of the aggregate funding differential favoring predominately white institutions, suggests that approximately eighty three percent is due to the difference in institutional characteristics and production, including for example lower undergraduate and graduate credit hour production at historically black compared to predominately white institutions. After accounting for these differences, the remaining seventeen percent of the funding differential was attributed to the differential treatment of historically black compared to predominately white colleges and universities. As a result, the empirical estimates imply that an overall redistribution of state funding would be necessary to move historically black and predominately white colleges and universities toward funding equality.

However, doing so on the basis of specific funding targets or measures further suggests that funding gains as well as losses would be incurred in certain areas of funding targets that university managers have allocated resources to in the past. This further implies a reallocation of internal university resources to accommodate new funding mechanisms. And this in itself may be costly and, therefore, may have to be weighed against the benefits to be gained in the interest of historically black colleges and universities.

On another matter, as a policy prescription, the redistribution is based on the notion that one would find it unacceptable for seventeen percent of the difference in state monies flowing to predominately white compared to historically black colleges to be due to differential treatment. Although in this case it is a matter of inter-institutional comparisons, it is analogous to a seventeen percent male-female, black-white, white-Hispanic, etc. earnings differential for the same education, experience, and productivity. To that end, judgment must fall to the individual reader.

On stronger grounds, the notion of the existence of fiscal discrimination based on the present estimates is subject to a host of potential theoretical, statistical, and practical issues. It resides with appropriately matching the theoretical methodology with available empirical data and agreement between what is theoretically plausible and what is done in practice. Although the methodology employed here appears to stand on fairly firm ground throughout the literature, specifying its empirical implementation so as to accu-

rately capture the complexity of higher education funding is perhaps another issue. Yet, it is not a unique issue. It is one that has prevailed throughout the literature dealing with the effects of discrimination. For example, Cain's (1986) review of twenty studies of female-male earnings using similar decompositions produces estimates of discrimination on a nearly continuous scale ranging from forty percent to seven percent depending on the particular empirical variables and data used in the studies.¹⁵ However, neither the lack of empirical regularities or any particular finding within this range of results has led to the abandonment of a concern regarding labor market discrimination. By the same token, confidence in or rejection of the present estimates of fiscal discrimination would hopefully lead to further inquiries.

Of course, some additional caveats are attached to the redistribution policy implications derived from the present analysis. As with past studies, there are inherent weaknesses introduced by the quality of the data. The data collected at the national level by the U.S. Department of Education via IPEDS is a well tested and universally distributed survey instrument. However, it is not designed to and, therefore, does not enable one to uncover the very specific state mechanisms by which public institutions are funded. As a result, in the present analysis it is necessary to aggregate historically black and predominately white public institutions across states. Admittedly, it would be preferable to gather data and conduct intra-state comparisons regarding potential black-white institutional differentials with respect to the very state specific state funding mechanisms applied to differences in academic programs, library facilities, program offerings, faculty qualifications and compensation, etc. However, presently these differentials can only be proxied with aggregate financial funding measures. Yet, the results presented here do shed sufficiently new light on the issue to warrant further research into the issues surrounding the potential funding disparities among predominately white in comparison to historically black colleges and universities.

15. Glen G. Cain, "The Economic Analysis of Labor Market Discrimination: A Survey," in Orley Ashenfelter and Richard Layard, *Handbook of Labor Economics* (Amsterdam: North-Holland, 1986), 693-785.

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