APPROPRIATE TESTS OF RACIAL WAGE DISCRIMINATION REQUIRE CONTROLS FOR COGNITIVE SKILL: COMMENT ON CANCIO, EVANS, AND MAUME*

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Cancio, Evans, and Maume (1996, henceforward Cancio et al.) claim that discrimination, measured as a residual from an earnings attainment regression, increased after 1976. Their claim depends crucially on which variables are controlled and which variables are omitted from the regression. We believe that the authors have omitted the key control variable—cognitive skill.

To show that wage discrimination against Black workers increased in the 1980s, Cancio et al. offer a decomposition analysis in their Table 4 that presents the share of the race gap in the log of hourly wage explained by a set of "nondiscriminatory" regressors for the years 1976 and 1985. For Black females compared to White females in 1976, the nondiscrimination component accounts for 97 percent of the gap; in 1985 it accounts for 118 percent of the gap. That is, there is virtually no evidence of race discrimination for females in either year! The authors then do a similar calculation comparing Black females to White males. Even if we agree with Cancio et al.'s interpretation of the "unexplained" portion of the wage gap as discrimination, it is important to recognize that an increase in the unexplained component of the wage gap between White males and Black females does not necessarily imply an increase in race discrimination. The unexplained component of this decomposition combines race and sex discrimination and any interaction between the two. Finally, when Black males are compared to White males, 81 percent of the 1976 wage gap is explained by the nondiscrimination component, whereas this component explains 74 percent of the gap in 1985. The principal evidence for Cancio et al.'s assertion that discrimination increased during the 1980s rests largely on this 7 percentage-point difference.

Our Table 1, based on National Longitudinal Survey of Youth (NLSY) data for male workers ages 26 to 33 who held full-time jobs in 1991, demonstrates how crucial cognitive skill is for understanding Black/White differences in earnings. In Table 1, cognitive skill is measured as the average score on tests of word knowledge, paragraph comprehension, arithmetic reasoning, and mathematical knowledge. These tests were administered in 1980 when the individuals were 15 to 22 years old. Test scores were standardized into z-scores and then averaged.

Model 1 in Table 1 presents regression coefficients for a specification similar to theirs in which cognitive skill is omitted. Summing the values for the percent of the Black/White wage gap explained by each variable shows that the regression included in Model 1 accounts for 81 percent of the wage gap. Using the logic of Cancio et al., this leaves 19 percent of the wage gap attributable to discrimination. Model 2 repeats the calculations with the measure of cognitive skill controlled. With cognitive skill included in the model, 109 percent of the wage gap is explained and the finding of race discrimination against Black men is gone! Further, the effect of cognitive skill (which explains far more of the wage gap than any other variable[1]) is a con-

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[1] We have followed Cancio et al.'s practice of using the coefficients for African Americans. If we repeat these calculations using the coefficients for Whites, the pattern is similar to that shown in our Table 1. The nondiscriminatory variables explain 55.6 percent of the wage gap when the cognitive skill variable is omitted (Model 1) and 79.5 percent when the cognitive skill variable is included (Model 2).

Table 1. Coefficients from Regression of (ln) Hourly Wage on Selected Independent Variables, and Percent of Wage Gap Explained: Full-Time Black Male Workers, Ages 26 to 33 in 1991

Independent Variable	Mean Difference (Black minus White)	Coefficients		Percent of Wage Gap Explained	
		Model 1	Model 2	Model 1	Model 2
Cognitive skill (1980)	−1.000	—	.109***	—	40.43
Years of school	−.627	.069***	.045***	16.11	10.41
Work experience (weeks)	−75.861	.001***	.001***	22.48	22.48
Mother's education (years)	−1.255	.013*	.010	6.18	4.56
Age in 1979	−.110	−.002	−.007	−.07	−.29
Lives in rural area	−.122	−.019	−.016	−.86	−.74
Lives in the South	.320	−.168**	−.166**	19.91	19.68
Health limitation	−.005	−.038	−.050	−.07	−.10
Married	−.219	.179***	.164***	14.52	13.30
Grew up in South	.341	−.014	.014	1.80	−1.73
Number of children under age 18	.304	−.012	−.007	1.36	.81
Has preschool child	.045	.022	.006	−.36	−.09
R^2 (adjusted)	—	.274	.295	—	—
Total	—	—	—	80.99	108.72

Note: The mean of the dependent variable for this sample is 6.75. The dependent variable is ln(100 × dollars per hour). The sample size is 602.

*$p < .05$ **$p < .01$ ***$p < .001$ (two-tailed tests)

servative estimate because it is based on tests administered 11 years earlier. We conclude that had Cancio et al. included a control for cognitive skill, their findings and conclusions would have been very different; the entire Black/White wage gap for males would have been explained by the nondiscrimination component.

IMPLICATIONS

Earnings returns to human capital variables like education and experience increased strongly during the 1980s (Juhn, Murphy, and Pierce 1993; Murphy and Welch 1993). Returns to directly measured cognitive skills also increased strongly during this period (Murnane, Willett, and Levy 1995). The consensus of other empirical researchers is that the narrowing of the Black/White gap in wages stopped during the 1980s precisely because the Black/White gap in skills remained large (one standard deviation in the data analyzed in Table 1) while the returns to skill increased (Juhn, Murphy, and Pierce 1991; Murnane et al. 1995; O'Neill 1990; Smith 1993; Smith and Welch 1989). These developments are consistent with the lack of evidence for increased discrimination in the 1980s (Burstein 1994; for a broader discussion of problems in the measurement of labor market discrimination, see Burstein 1990).

Cancio et al's conclusion that racial discrimination increased during the 1980s should be regarded with skepticism. While we do not take the possibility of labor market discrimination lightly, we see no evidence that it *increased* since 1976. Further, we are concerned that this claim is probably erroneous, and that focusing on it will divert attention away from the true causes of inequality in Black/White earnings for which significant actions are needed.

More broadly, we believe that the nation's most pressing social concern should be the poor school performance and exposure to violence of many low-income, minority, and central-city youth. The costs to these children in emotional pain and blighted opportunity are immense. To incorrectly attribute the lost earnings of these children to an increase

in racial discrimination is likely to direct attention away from the school and family failures that are its real cause.

We have been studying the Dallas Independent School District for the past 10 years (Farkas 1993, 1996; Farkas et al. 1990). A majority of the 143,000 children in this district come from low-income households. Fully 85 percent are African Americans or Mexican Americans. Almost 80 percent are reading below grade level at the end of third grade. By middle and high school, most students read so far below grade level that they have difficulty coping with the assigned curriculum. The school dropout rate is high, and the majority of high school graduates are unprepared for college. Associated problems of low self-esteem and delinquency are widespread. Yet it has been statistically demonstrated that if these children could read at grade level, their scores on curriculum-referenced tests of middle school and high school subject matter would equal those of Anglo children (Farkas 1993, 1996).

For years compensatory programs have been developed and implemented to correct reading difficulties in the elementary grades before they become entrenched. These programs have proven successful in raising the reading capabilities of at-risk children (Farkas 1993, 1996; Madden et al. 1993; Pinnell et al. 1994; Slavin et al. 1990). Funding for the federal program—Title I of the Elementary and Secondary Education Act—supporting such efforts is currently about $6 billion, twice the funding for the more familiar Head Start program. Yet sociologists seem unaware of these efforts. This is regrettable because recent changes in the legislation and its implementation threaten to reduce or destroy the progress that has been made by these programs.

The most successful programs represent innovations in a Title I delivery system which has been largely ineffective over more than 20 years of operation (Arroyo and Zigler 1993; Madden and Slavin 1989; Natriello, McDill, and Pallas 1990). These innovative programs have focused on one-on-one instruction in which students in the elementary grades leave their classroom for a daily 30-minute tutoring session. Such one-on-one instruction is the most powerful form of intervention, and the early elementary grades are the most important time to intervene (Wasik and Slavin 1993). However, the recently passed reauthorization of Title I appears to have reduced funding for these programs because the legislation makes it easier for local school administrators to shift Title I funds away from these programs to spend them on items that were previously paid for by local tax moneys. At the same time, Title I regulations now require administrators to shift some of the money out of elementary schools and into middle and high schools, and to deemphasize student pullout, on which one-on-one instruction depends. When these legislative changes were used to advance the personal/political agendas of Dallas school bureaucrats, the portion of the budgets of low-income elementary schools targeted on direct services to at-risk children was reduced by many millions of dollars, and the one-on-one tutoring program we manage was cut back to only 400 children, down from 2,400 the previous year (Farkas 1996, chap. 12).

Researchers concerned with "the significance of race" have much to focus on here. Why have real expenditures for public schools soared without showing commensurate increases in student achievement (Hanushek 1994)? What sociological factors have affected the public schools so that even as African American mayors and school administrators have become increasingly prominent during the 1980s and 1990s, the school performance of inner-city African American students has failed to significantly improve? (For an important first attempt at this under-researched issue, see Rich 1996.) What programs will help inner-city children to read at grade level and achieve the cognitive skills necessary for employment in good-paying jobs? Which of the many current school-reform proposals will significantly improve the school performance of the hundreds of thousands of at-risk students in our nation's cities? A research agenda such as this would make the study of inequality truly relevant to improving the life chances of those at the bottom.

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the program he and Mary Warren invented, has operated out of the Center since 1991. During the 1995-96 school year, the program provided one-on-one instruction to at-risk students in Dallas, Richardson, Brownsville, San Antonio, and Salt Lake City. His book on central city student achievement and interventions to improve it is Human Capital or Cultural Capital? Ethnicity and Poverty Groups in an Urban School District *(Aldine de Gruyter, 1996).*

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REFERENCES

Arroyo, Carmen G. and Edward Zigler. 1993. "America's Title I/Chapter 1 Programs: Why the Promise Has Not Been Met." Pp. 73–95 in *Head Start and Beyond: A National Plan for Extended Childhood Intervention,* edited by E. Zigler and S. Styfco. New Haven, CT: Yale University Press.

Burstein, Paul. 1990. "Intergroup Conflict, Law, and the Concept of Labor Market Discrimination." *Sociological Forum* 5:459–76.

———. 1994. "Evaluating the Effects of the Act: Employment (Title VII)." Presented at the Conference on The Civil Rights Act of 1964: A Thirty Year Perspective, November 11–12, Federal Judicial Center, Washington, DC.

Cancio, A. Silvia, T. David Evans, and David J. Maume. 1996. "The Declining Significance of Race Reconsidered: Racial Differences in Early Career Wages." *American Sociological Review* 61:541–56.

Farkas, George. 1993. "Structured Tutoring for At Risk Children in the Early Years." *Applied Behavioral Science Review* 1(1):69–92.

———. 1996. *Human Capital or Cultural Capital? Ethnicity and Poverty Groups In an Urban School District.* New York: Aldine de Gruyter.

Farkas, George, Robert Grobe, Daniel Sheehan, and Yuan Shuan. 1990. "Cultural Resources and School Success: Gender, Ethnicity, and Poverty Groups within an Urban School District." *American Sociological Review* 27:807–27.

Hanushek, Eric. 1994. *Making Schools Work.* Washington, DC: The Brookings Institution.

Juhn, Chinhui, Kevin Murphy, and Brooks Pierce. 1991. "Accounting for the Slowdown in Black-White Wage Convergence." Pp. 107–43 in *Workers and Their Wages: Changing Patterns in the United States,* edited by M. Kosters. Washington, DC: American Enterprise Institute.

———. 1993. "Wage Inequality and the Rise in Returns to Skill." *Journal of Political Economy* 101:410–42.

Madden, Nancy A. and Robert E. Slavin. 1989. "Effective Pullout Programs for Students at Risk." Pp. 52–72 in *Effective Programs for Students at Risk,* edited by R. Slavin, N. Karweit, and N. Madden. Needham Heights, MA: Allyn and Bacon.

Madden, Nancy A., Robert E. Slavin, Nancy L. Karweit, Lawrence J. Dolan, and Barbara A. Wasik. 1993. "Success for All: Longitudinal Effects of a Restructuring Program for Inner-City Elementary Schools." *American Educational Research Journal* 30:123–48.

Murnane, Richard, John Willett, and Frank Levy. 1995. "The Growing Importance of Cognitive Skills in Wage Determination." *Review of Economics and Statistics* 77:251–66.

Murphy, Kevin and Finis Welch. 1993. "Inequality and Relative Wages." *American Economic Review:Papers and Proceedings* 83(2):104–109.

Natriello, Gary, Edward McDill, and Aaron Pallas. 1990. *Schooling Disadvantaged Children.* New York: Teachers College Press.

O'Neill, June. 1990. "The Role of Human Capital in Earnings Differences between Black and White Men." *Journal of Economic Perspectives* 4:25–45.

Pinnell, Gay Su, Carol Lyons, Diane DeFord, Anthony Bryk, and Michael Seltzer. 1994. "Comparing Instructional Models for the Literacy Education of High-Risk First Graders." *Reading Research Quarterly* 29:8–39.

Rich, Wilbur C. 1996. *Black Mayors and School Politics: The Failure of Reform in Detroit, Gary, and Newark.* New York: Garland Publishing Co.

Slavin, Robert, Nancy Madden, Nancy Karweit, B. Livermon, and Lawrence Dolan. 1990. "Success for All: First-Year Outcomes of a Comprehensive Plan for Reforming Urban Education." *American Educational Research Journal* 27:255–78.

Smith, James. 1993. "Affirmative Action and the Racial Wage Gap." *American Economic Review:Papers and Proceedings* 83(2):79–84.

Smith, James and Finis Welch. 1989. "Black Economic Progress after Myrdal." *Journal of Economic Literature* 27:519–64.

Wasik, Barbara A. and Robert E. Slavin. 1993. "Preventing Early Reading Failure with One-to-One Tutoring: A Review of Five Programs." *Reading Research Quarterly* 28:178–200.