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RACIAL DIFFERENCES IN OCCUPATIONAL STATUS AND INCOME IN SOUTH AFRICA, 1980 AND 1991*

DONALD J. TREIMAN, MATTHEW MCKEEVER, AND EVA FODOR

Using data on employed men from the 1980 and 1991 South African Censuses, we analyze the determinants of occupational status and income. Whites are found to have much higher occupational status, and especially income, than members of other racial groups. Most of the racial differentials in occupational status can be explained by racial differences in the personal assets that determine occupational attainment (especially education), but only a much smaller fraction of the White/non-White income differential can be so explained. Despite a modest reduction between 1980 and 1991 in the role of race in socioeconomic attainment, the overall picture shows more stability than change.

South Africa, with a current population of about 40 million,[1] is a country of unusual social scientific interest, largely because until the April 1994 transformation it was the only remaining national society whose political system and state institutions were designed explicitly to secure the advantage of one ethnic group at the expense of the remainder of the population.[2] In South Africa, 13% of the population dominated the remaining 87% by force of law and arms. Although the country finally has adopted a nonracial governmental system, it is of great interest, on both theoretical and policy grounds, to understand how the system of racial domination was organized and what the consequences have been for the socioeconomic opportunities and achievements of its component racial groups. In this paper we address the consequences—racial differences in occupational attainment and income.

South Africa's four official racial groups[3] (Whites, Asians, Coloureds, and Blacks)[4] differ substantially as to income and other socioeconomic attributes. In 1991, the last

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1. Sadie (1991) estimates the March 1991 population of all of South Africa (including the TBVC states) as approximately 37,738,000.

2. Although both Malaysia (Grove 1993) and Israel (Semyonov and Lewin-Epstein 1987) base some rights and privileges on ethnic status, neither employs the thoroughgoing system of ethnic distinctions that historically has characterized South Africa.

3. Although racial distinctions historically were enforced in South Africa with varying degrees of rigidity, there is no ambiguity about the importance of these four categories, in both law and custom, as the primary axes of racial differentiation. Most important for our purposes, almost all statistical tables published by the South African Central Statistical Service are divided on the basis of race, using these four categories. This usage has held from at least the 1904 census continuously through the 1991 census.

4. The politics of language renders unsatisfactory any particular terms for describing South African racial groups. Those on the political left often use "African" to describe the indigenous Bantu-speaking majority, and "Black" to describe all groups except "Whites." This usage creates two difficulties. First, Whites of Dutch origin, who have been in South Africa for some 300 years, are commonly known as "Afrikaners," which is simply Afrikaans for "Africans." Thus two different groups are described as "Africans," albeit in different languages.

Moreover, because "Black" is also used to describe the Bantu-speaking majority, confusion results from the expansion of "Black" to encompass the other two official non-White groups—"Asians" (essentially those of Indian origin, with a small Chinese minority) and "Coloureds" (a group formed from unions between Whites and various other groups, including the now-extinct Khoi people indigenous to the Cape, and slaves from the East Indies and from other parts of Africa). This confusion is so great that those committed to the encompassing use of the term "Blacks" sometimes refer to the Bantu-speaking majority as "Black Blacks."

Finally, it is politically correct (on the left) always to put "Coloured" in quotation marks and, indeed, to refer to this group as "so-called Coloureds." All of this makes writing extremely cumbersome. Thus we have adopted the racial categories used by the apartheid government, and specifically by the statistical office—White, Asian, Coloured, and Black—and will use these without quotation marks. For want of anything better, we also use "non-White" to identify collectively the three racial groups other than Whites, and "non-Black" to identify the groups other than the Bantu-speaking majority.

date for which suitable census data are available, non-White men, who constituted 77% of the male labor force (excluding the TBVC states; see below), on average earned 19% of what White men earned, up from 15% in 1980. (The details for specific groups are shown in Table 1.) Thus, racial differences in South Africa are far larger than in other multiethnic countries. In the United States, for example, black males in 1992 earned, on average, about 72% of what white males earned.[5] In Israel, Arabs in 1983 earned 63% of what Jews earned (Semyonov 1988:259).

The South African government has been widely condemned for its apparent denial of equal opportunity to South Africa's nonwhite racial groups. Yet some observers challenge this view, arguing that observed racial differences in occupational status and income simply reflect racial differences in human capital (Houghton 1976:159, 167–68). Although such a perspective tends to ignore the institutional arrangements that create differences in human capital—particularly a segregated and highly unequal educational system (Behr 1988; Lemmer 1993)—it serves the useful function of treating as problematic the explanation for racial differences in socioeconomic outcomes.

On this question, little is known. There are some papers based mainly on published tabulations from the 1960, 1970, and 1980 censuses and similar sources (Human and Greenacre 1987[6]; James and Loots 1985; Knight and McGrath 1977; Nattrass 1977; Trotter 1977), but little otherwise. The implications of alternative explanations are very important, however, on both theoretical and policy grounds. Imagine two alternative scenarios: that racial differences in occupational status and income in South Africa are entirely due to premarket discrimination, or that they are the consequence of market discrimination. Both the theoretical implications and the policy prescriptions would be quite different in the two cases.

To address this question, we here analyze racial and ethnic differences in occupational status and income, using data from public use samples of the 1980 and 1991 South African Censuses. We have two central interests: 1) to determine the extent to which racial differences in occupational status and income in South Africa in 1980 and in 1991 can be attributed to racial differences in the personal attributes or "assets" that determine socioeconomic outcomes in all societies; and 2) to assess the nature of changes in the determinants of occupational status and income between 1980 and 1991. Because it has been claimed that racial differences in socioeconomic opportunity and achievement began to disappear (Hindson 1991:232–34) as apartheid policies and practices were relaxed during the 1980s (Thompson 1990:224–28), we conduct parallel analyses for 1980 and 1991, the two most recent years in which income data were collected as part of the census.

DATA

This analysis is based on data from a 5% public use sample of the 1980 Census of South Africa and a subsample equal to about 5% of the population drawn from a larger public use sample of the 1991 Census.[7] Unfortunately the politics of race intrudes into the research process. To reduce the Black population of "South Africa," the South African government between 1967 and 1979 created four nominally independent states: Transkei, Bophutatswana, Venda, and Ceskei (known collectively as the TBVC States). Although no other government recognized these territories as independent states, and although in general there were no visible borders as one traveled between the TBVC states and the remainder of South Africa, the South African government treated them as foreign territories until their reincorporation into South Africa proper in early 1994. Consequently their populations, totaling nearly 7 million people, or about one-sixth of the total population of South Africa and nearly one-quarter of the total Black population, were not included in either the 1980 or

5. Among full-time year-round male workers with income, the ratio of the median black to the median white income in 1992 was .72 (U.S. Department of Commerce 1992:472).

6. This paper also provides a useful review of several unpublished papers, mainly in Afrikaans.

7. We thank the South African Central Statistical Service for making the 1980 data available to us, and the Human Sciences Research Council (particularly Hans de Roos and Felicity Howard) for making the 1991 data available. The 1991 data set provided to us was "File 1." This file is quite poorly documented: it purports to include all respondents to the 1991 census (Central Statistical Service 1991b:xvi) but has an unweighted size equal to only about two-thirds of the population, too few cases to be corrected simply by adjusting for undercount. Two weights are available in the data. When the data are weighted with WEIGHT2, the resulting frequency distributions agree quite closely with population estimates published by the South African Central Statistical Service, which adjust for undercount (e.g., 1991b). Undercounts of the population typically are quite large in South African censuses: they are estimated at 22.5% of Blacks, 8.5% of Whites, 4.4% of Asians, and 3.2% of Coloureds in 1980, and 16.8, 10.8, 12.4, and 10.8% in 1991, respectively (Central Statistical Service 1991a:ix). The 1980 public use sample similarly was corrected for undercount (Central Statistical Service 1991b:xvi), but the details are not available.

So far as we can tell, the 1980 public use sample file contains a 5% sample of the adjusted data and is self-weighting. Thus we have used this file without further adjustments.

To reduce computing time and to make the 1980 and 1991 samples approximately equal in size, we extracted a 7½% random sample from the unweighted 1991 data (approximately equivalent to a 5% sample of the population). Then we constructed a new weight variable by dividing WEIGHT2 by its mean (= 1.52) in order to render the size of the weighted sample identical to the size of the unweighted sample.

the 1991 Census.[8] Because the populations of the TBVC States are virtually 100% Black, and because they tend to be the most socioeconomically marginal segment of the Black population, the data available to us[9] overstate the socioeconomic achievements of the Black population and understate racial differences in socioeconomic achievement.

For our analysis, we restricted the sample to males age 20–64 with an occupation, with income greater than zero, and with no missing data on any of the independent variables in our regression equations (see below). We excluded women from this analysis because income differences between men and women are so large, and rates of female labor force participation are so variable across racial groups, as to necessitate separate analyses of men and of women; the inclusion of women would have nearly doubled the length of this paper. The age restrictions ensure that our respondents have completed their schooling and are not engaged in retirement occupations. The restriction of the sample to those who reported an occupation was required because occupational status is one of our dependent variables. The restriction to men with positive incomes avoids the interpretative difficulties that arise when employed men report zero or negative income, which ordinarily is done for tax purposes. The exclusion of those with missing data on the various independent variables facilitates interpretation because all statistics are based on the same cases.[10] The resulting sample includes 233,861 men in 1980 and 271,960 men in 1991.

Racial and Ethnic Classification

As we have noted, South Africa's population is officially divided into four racial groups, and most official statistics are published separately for these groups. Within the racial classification, however, a number of subgroup distinctions are of particular interest.

Whites. First, the distinction between Afrikaners and English-origin Whites is crucial in South African history. Not only was a war fought between the two groups; also, well into the twentieth century, the Afrikaner population was poor, rural, and ill-educated, while the English population was urban, well-educated, and dominant in government and commerce (Thompson 1990).

Although only a small fraction of the White population (6.3% in 1980 and 3.4% in 1991) was other than Afrikaner or English-origin South African, it consists of several sociologically interesting groups: Jews,[11] who began to arrive in the nineteenth century and have played an important role in the financial development of mining and other industries; and members of various European groups, who mostly came either as the result of the government's campaign to encourage White immigration or as post-Independence émigrés from other African countries. It is not lost on Blacks (or Asians or Coloureds) that Portuguese from Angola or Mozambique were immediately accorded privileges not available either to South African non-Whites or to Blacks from those countries.

Asians. Among Asians,[12] a distinction is made on the basis of religion between Hindus, Moslems, and "others" (mostly Christians). The Indian population is subdivided because when they arrived from India toward the end of the nineteenth century, Moslems were much more likely than Hindus to have paid their own passage; the latter were more likely to have been imported as indentured laborers (Pachai 1971:7). We are interested in determining whether the Moslems' initial advantage continues today, several generations later. We have added a third category, "other," to take account of the fact that a sizable fraction of the Asian population—mainly Hindus—has converted to Christianity (Oosthuizen 1979:545).[13]

Coloureds. The Coloured population is subdivided, both to capture the propensity of well-to-do Coloured families to switch from Afrikaans to English (Patterson 1953:167; Thomas 1982)—84% of the Coloured population speaks Afrikaans—and to capture the position of the Moslem Coloured population, which derives mainly from unions between Malay slaves and others but also from unions between Asians and Coloureds (Dvorin 1952:61–62; Thomas 1982).

8. The most precise estimate is that the 1991 population of all of South Africa, including the TBVC States, was 13.4% White (of whom about 60% were Afrikaans-speaking), 2.6% Asian, 8.7% Coloured, and 75.2% Black. When the TBVC States are excluded, these percentages are 16.4, 3.2, 10.6, and 69.9 (Sadie 1991).

9. Censuses were conducted in each of the TBVC States in 1980 and 1991, albeit usually with a more limited set of questions than were asked in the South African Census. We have attempted to obtain unit-record data for these territories but thus far have been unsuccessful.

10. This would be problematic if there were substantial bias in the propensity not to respond to particular items. Only the most minor differences, however, are revealed by parallel tabulations made with all the information available for each computation.

11. Jews are the only White group distinguished on the basis of religion rather than language spoken at home ("home language") or place of birth. Most South African Jews were born there (83% in our 1991 sample), and virtually all South African born Jews speak English as their first home language (96%). Nonetheless they remain a distinctive group, both in their own eyes and in the eyes of others. (See Lever 1978, 1979.)

12. This group is mainly Indian but also includes a few Chinese and "other Asians"—that is, those not from the Indian subcontinent. More than 60,000 Chinese were imported to work in the mines in the first few years of the twentieth century, thus establishing a small Chinese population (Richardson 1982).

13. The number of Hindus declined sharply between 1980 and 1991, while the proportion of Asians of "Other religion" increased dramatically.

Blacks. Finally, the Black population is divided into the major language groups identified in the census. Again, the politics of race intrudes. At various points in South African history, the government, in a "divide and conquer" strategy, has emphasized the distinctions between different Black groups. It has insisted on creating separate schools on the basis of language even in places such as Soweto, where members of various Black populations live side by side and are likely to inter-marry. It is not clear, however, that any rational basis exists for making such distinctions in the census statistics—that is, any reason based on group differences in the level of "sociocultural" development or in the socioeconomic characteristics of the different groups. To test this possibility, we distinguished the 10 major Black language groups.

Operational Procedures

For descriptive purposes we distinguish 29 groups by race, and within race by ethnicity. Whites are distinguished on the basis of "home language" (that is, language spoken at home)[14] and, among English-speakers and Afrikaans-speakers, between those born in South Africa and those born abroad.[15] The only exception is Jews; all Whites who state that their religion is Jewish are identified as Jews, regardless of language spoken. Jews, however, are divided into South African and foreign-born to capture possible distinctions between long-established South African Jews who arrived in the nineteenth century and recent arrivals. Coloureds are divided into Moslems and "Others" on the basis of religion; the non-Moslems are divided further into English speakers and Afrikaans speakers.[16] Asians are divided into Moslems, Hindus, and "Others" on the basis of religion. Blacks are divided on the basis of "population group" in 1980 and on the basis of "home language" in 1991.[17] To keep the analysis manageable, however, we restrict our regression analyses of the determinants of occupational status and income to comparisons of the four official racial groups. We will elaborate on this point below.

DESCRIPTIVE INFORMATION

Table 1 provides pertinent social and economic information about each of the 29 ethnic groups. Note first the absolute and the relative sizes of the categories. In 1991 they range in size from 77 Dutch speakers, less than .1% of our sample, to 51,465 Zulus, about 19% of our sample. As anticipated because of the exclusion of the TBVC States, non-Blacks are overrepresented in this sample and Blacks are underrepresented, relative to the whole population of South Africa. A second reason for the underrepresentation of Blacks in this sample is that they have much higher unemployment than the other three groups (Nattrass 1988:57; South African Institute of Race Relations 1990:633–35). In 1991 the racial distribution of the South African male population age 20–64 (excluding the TBVC states) was 19.2% White, 3.4% Asian, 10.4% Coloured, and 66.9% Black. The corresponding distribution of the male labor force with an occupation and a positive income the previous year (and with no other missing data)[18] was 23.4% White, 3.8% Asian, 10.7% Coloured, and 62.0% Black. These figures result from the fact that 18%, 24%, 30%, and 37%, respectively, of the working-age male population are excluded from our analysis.

We already have noted the extremely large racial differences in income in South Africa: non-Whites' incomes in 1991 averaged 19% of Whites' incomes. Not only Blacks, but Asians and Coloureds as well, have much lower incomes than Whites; in 1991 Asians' incomes averaged 43% of Whites, those of Coloureds 23%, and those of Blacks 16%. To be sure, the racial gap in income was reduced somewhat between 1980 and 1991, as gains in real income by Blacks (26% on average) outstripped those of all other groups (5% for Whites and Coloureds, and 24% for Asians). Even in 1991, however, no non-White ethnic group averaged as much as Portuguese immigrants, the poorest White ethnic group.

What is striking is the lack of ethnic differentiation among Blacks, in sharp contrast to Whites and Coloureds. In 1991 the highest Black group (Other Blacks) averaged only 31% more income than the lowest Black group (Tswana). Among Whites, by contrast, the highest group (foreign-born

14. Those responding in 1991 that they speak Afrikaans and English "to the same extent" (*eweveel* in Afrikaans) were coded as Afrikaners.

15. Afrikaans is spoken only in South Africa, but is a derivative of Dutch. Thus it is probable that foreign-born persons speaking Afrikaans as a home language either came to South Africa as children or came as adults from Namibia, the Netherlands, or perhaps Germany. We have no information on Afrikaans speakers' age of arrival in South Africa, but we do know that about one-third were born in Namibia (long a South African colony), about one-sixth elsewhere in southern Africa, about one-sixth in the Netherlands and Germany, and about one-sixth elsewhere. The remaining one-sixth failed to report their place of birth.

16. Because Afrikaans speakers constitute the overwhelming majority of Coloureds, the small number of persons who claimed languages other than English or Afrikaans were included with the Afrikaans speakers.

17. In another manifestation of the politics of race, the "population group" (*bevolkingsgroep*) classification used in the 1980 South African Census distinguishes four subcategories of Coloureds, three of Asians, and 12 of Blacks, but *no* subcategories of Whites. In the 1991 census, however, only the four major race categories were distinguished in the "population group" variable. In general, less detail is provided in the 1991 than in the 1980 public use sample. We say more about this below.

18. Missing data on other variables account for only very small fractions of the total number of missing cases.

TABLE 1. SELECTED SOCIOECONOMIC CHARACTERISTICS OF 29 ETHNIC GROUPS, SOUTH AFRICA, 1980 AND 1991, MALE LABOR FORCE AGE 20–64 (ARRAYED BY RACE AND WITHIN RACE IN ORDER OF MEAN 1991 INCOME)

	Mean Income (1991 SA Rand)		Mean Occ. Status (ISEI)		% Upper Nonmanual		Mean Years of School Completed	
Race and Ethnic Group	1980	1991	1980	1991	1980	1991	1980	1991
TOTAL	17,783	19,955	34.4	36.6	9.6	12.1	4.8	6.1
WHITE								
Jewish (FB)	79,010	97,934	57.1	59.6	51.0	63.5	10.0	11.4
Jewish (SA)	72,657	89,332	59.6	60.7	52.4	64.3	10.7	11.2
German HL	59,208	68,552	52.0	53.6	44.2	54.4	10.2	10.9
Dutch HL	54,753	62,461	50.6	54.3	47.7	54.2	10.5	11.3
English HL (FB)	57,209	62,229	51.7	53.3	43.7	50.1	10.0	10.4
English HL (SA)	51,198	55,829	49.5	51.5	34.2	42.7	9.6	10.2
Afrikaans HL (FB)	49,383	50,291	47.1	48.7	32.5	35.0	9.6	10.0
Afrikaans HL (SA)	47,657	48,465	44.7	46.7	21.9	29.2	9.1	9.8
Italian HL	45,917	47,695	43.9	46.9	21.0	37.1	7.7	9.7
Greek HL	43,391	44,813	45.5	53.6	17.6	43.3	8.8	9.4
Other White	46,229	39,110	43.7	44.3	20.0	32.6	8.7	9.0
Portuguese HL	37,460	33,350	40.0	43.8	8.6	18.8	6.5	7.8
Total	50,014	52,450	47.0	49.0	28.1	35.9	9.3	10.0
ASIAN								
Asian, Moslem	22,552	30,033	45.7	50.3	13.5	28.8	7.4	8.7
Asian, Hindu	17,158	21,751	39.8	43.1	12.2	17.0	6.9	8.5
Asian, other religion	18,222	20,943	39.9	43.5	14.4	19.1	6.9	8.4
Total	18,408	22,773	40.9	45.5	12.9	19.7	7.0	8.5
COLOURED								
Other Coloured, English HL	20,830	22,299	39.3	42.3	12.1	17.1	7.3	8.5
Coloured, Moslem	16,117	17,603	37.6	40.1	6.6	11.6	6.2	7.5
Other Coloured, Afrikaans HL	9,446	9,856	30.5	31.4	4.2	4.5	4.1	5.3
Total	11,274	11,857	32.0	33.2	5.3	6.5	4.7	5.8
BLACK								
Other Black	6,775	10,147	29.9	30.0	2.7	3.4	3.3	4.1
North Sotho	7,264	9,958	30.1	32.7	2.8	5.8	3.2	4.8
South Sotho	6,507	9,559	29.7	32.7	4.2	4.6	3.1	4.8
Shangaan	6,636	9,052	30.3	32.9	4.2	3.7	2.4	3.7
Zulu	6,872	8,873	31.0	33.4	3.5	4.5	3.2	5.0
Swazi	5,794	8,671	29.3	31.9	3.0	4.1	2.5	4.1
South Ndebele	6,403	8,526	29.2	32.1	1.6	3.7	2.3	3.9
North Ndebele	5,881	8,508	28.8	33.0	4.1	5.1	2.7	4.4
Xhosa	6,330	8,252	28.5	30.2	1.6	1.6	2.7	4.1
Venda	6,595	7,908	28.9	29.7	2.7	0.7	2.8	4.7
Tswana	6,207	7,734	28.3	28.8	2.7	2.6	2.9	3.6
Total	6,609	8,294	29.7	31.9	3.0	3.8	3.0	4.5

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Race and Ethnic Group	Mean Years of Labor Force Exp.		% with Skill in Afrikaans		% with Skill in English		% Self–Employed	
	1980	1991	1980	1991	1980	1991	1980	1991
TOTAL	25.1	25.0	47.4	50.4	53.7	56.7	4.8	9.2
WHITE								
Jewish (FB)	30.3	24.9	43.2	35.4	97.9	95.3	40.6	43.2
Jewish (SA)	23.5	24.1	92.2	87.1	99.7	100.0	35.8	51.0
German HL	23.7	25.9	59.3	57.2	93.0	94.7	22.8	37.5
Dutch HL	28.6	30.3	84.9	85.1	90.2	93.1	23.5	28.0
English HL (FB)	23.5	24.6	33.3	38.9	99.2	99.2	12.7	26.5
English HL (SA)	23.6	22.4	91.0	91.5	99.9	99.9	12.3	24.0
Afrikaans HL (FB)	22.1	22.8	96.7	98.3	92.4	96.2	14.6	18.4
Afrikaans HL (SA)	22.1	21.9	99.8	99.9	96.6	96.2	13.8	17.4
Italian HL	28.2	28.6	14.1	30.7	67.9	75.3	24.3	34.6
Greek HL	24.6	28.1	22.8	23.2	82.4	81.9	42.0	59.4
Other White	22.5	23.4	95.6	24.2	94.1	61.3	11.9	21.4
Portuguese HL	26.9	28.4	13.6	19.1	61.9	65.3	26.1	40.3
Total	22.5	22.5	87.6	88.6	96.7	97.0	14.0	21.1
ASIAN								
Asian, Moslem	22.1	23.0	50.3	51.9	98.1	97.9	22.7	38.0
Asian, Hindu	22.4	22.3	27.2	32.5	97.6	99.3	8.6	15.0
Asian, other religion	21.9	21.5	36.6	35.6	93.1	98.7	7.2	14.6
Total	22.2	22.1	33.4	37.1	96.9	98.8	11.2	18.7
COLOURED								
Other Coloured, English HL	22.4	21.3	83.7	84.2	99.0	99.4	3.3	9.7
Coloured, Moslem	22.5	21.8	95.7	95.7	87.8	89.6	8.4	13.8
Other Coloured, Afrikaans HL	24.5	23.6	79.9	87.4	50.8	47.4	1.5	3.7
Total	24.1	23.2	81.4	87.4	59.2	56.2	2.2	5.0
BLACK								
Other Black	27.1	24.8	26.6	22.1	40.1	22.5	0.8	2.7
North Sotho	24.8	27.2	31.5	42.5	35.4	44.8	0.9	3.7
South Sotho	27.0	26.4	36.7	40.0	36.5	39.5	2.0	7.2
Shangaan	27.6	27.9	23.5	22.8	26.8	27.7	1.9	5.7
Zulu	26.4	25.3	25.5	25.1	36.6	45.8	2.3	6.0
Swazi	26.3	25.8	27.0	28.6	27.6	31.8	1.8	6.8
South Ndebele	27.3	26.7	32.1	36.6	31.4	38.7	2.9	8.1
North Ndebele	26.9	29.6	30.5	42.3	33.9	50.7	1.2	8.0
Xhosa	25.6	26.8	18.5	23.4	27.2	34.1	0.3	2.6
Venda	27.5	27.0	26.7	31.5	34.0	45.4	0.4	4.7
Tswana	26.1	27.8	36.1	36.5	34.7	33.4	0.7	2.6
Total	26.3	26.4	28.0	30.4	34.4	39.0	1.4	4.8

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Race and Ethnic Group	% Government-Employed		% Government Business-Employed		% of Male Labor Force		Number of Cases in Sample	
	1980	1991	1980	1991	1980	1991	1980	1991
TOTAL	13.9	13.6	7.7	5.1	99.9	99.9	233,861	271,960
WHITE								
Jewish (FB)	8.3	11.7	0.5	0.6	0.1	0.0	192	119
Jewish (SA)	7.7	8.9	0.5	0.8	0.5	0.2	1,256	614
German HL	9.6	8.1	7.7	3.5	0.2	0.2	543	414
Dutch HL	9.9	9.1	6.1	6.0	0.1	0.0	132	77
English HL (FB)	8.5	7.1	5.6	3.9	2.3	2.7	5,324	7,235
English HL (SA)	15.3	12.1	10.7	7.9	6.5	6.3	15,268	17,016
Afrikaans HL (FB)	15.1	19.1	15.5	12.9	0.2	0.6	542	1,683
Afrikaans HL (SA)	24.3	21.9	20.3	13.6	9.7	13.0	22,602	35,224
Italian HL	3.6	4.3	3.6	1.4	0.1	0.0	333	108
Greek HL	3.1	5.0	5.7	2.2	0.1	0.1	193	173
Other White	19.2	11.0	19.2	14.6	3.5	0.2	8,157	428
Portuguese HL	3.2	3.9	6.2	2.6	0.3	0.2	721	551
Total	18.3	17.0	15.0	10.6	23.6	23.4	55,263	63,642
ASIAN								
Asian, Moslem	5.7	7.1	0.7	0.9	0.7	0.6	1,629	1,725
Asian, Hindu	11.5	13.1	2.4	2.7	2.2	1.5	5,199	4,178
Asian, other religion	10.6	12.1	3.3	2.4	0.6	1.7	1,428	4,511
Total	10.2	11.7	2.3	2.2	3.5	3.8	8,256	10,414
COLOURED								
Other Coloured, English HL	15.8	17.1	1.3	2.3	1.2	1.4	2,730	3,848
Coloured, Moslem	15.1	12.4	2.7	2.5	0.6	0.5	1,442	1,356
Other Coloured, Afrikaans HL	16.1	16.1	5.5	4.7	7.7	8.8	18,133	23,986
Total	16.0	16.1	4.8	4.3	9.5	10.7	22,305	29,190
BLACK								
Other Black	14.4	6.7	6.3	7.0	6.0	2.5	14,036	6,809
North Sotho	7.3	17.9	4.2	2.8	5.6	7.9	13,118	21,147
South Sotho	15.4	11.0	5.9	2.6	9.8	8.0	22,892	21,817
Shangaan	15.0	14.1	5.7	1.9	2.9	3.9	6,851	10,621
Zulu	13.3	12.2	6.1	4.2	16.4	18.9	38,433	51,465
Swazi	11.9	11.4	7.1	2.5	2.1	2.5	4,875	6,583
South Ndebele	9.3	10.5	6.1	3.3	0.9	0.8	2,120	2,122
North Ndebele	12.9	23.7	5.1	3.6	0.5	0.2	1,195	637
Xhosa	9.8	9.3	5.3	2.0	10.6	11.4	24,787	31,018
Venda	14.6	14.0	10.4	13.3	1.3	0.8	3,080	2,093
Tswana	9.8	10.3	4.8	3.2	7.1	5.3	16,650	14,402
Total	12.2	12.0	5.7	3.3	63.2	62.0	148,037	168,714

Note: FB = foreign-born; SA = South-African born; HL = home language.

Jews), averaged nearly three times (precisely, 2.94) more income than the lowest White group (Portuguese); among Coloureds, English speakers averaged more than twice (precisely, 2.26 times) as much as Afrikaans speakers. The Jews' extremely high incomes mirror those found by Treiman and Lee (1996) for Los Angeles.

Ethnic and racial differences with respect to various other socioeconomic variables—years of school completed, percentages in professional and managerial ("upper non-manual") jobs, and percentages self-employed—exhibit similar patterns, albeit with some variability from group to group.[19] For example, Jews and southern Europeans were substantially more likely than other Whites to be self-employed. Interestingly, the proportion self-employed in all groups nearly doubled between 1980 and 1991. It increased especially among non-White groups and most especially among Blacks, for whom the proportion self-employed more than tripled over this period; perhaps this change reflects a relaxation of the barriers to Black business ownership (Thompson 1990:227). Even so, the most striking intergroup differences in Table 1 involve Blacks. Even in 1991 they averaged only 4.5 years of schooling, less than any other group and less than half of the White average, and were virtually excluded from high-status jobs: fewer than 4% were professionals or managers ("upper non-manual"), in contrast to more than one-third of all Whites. These results are consistent with the possibility that once differences in education are taken into account, there are no racial differences in occupational status, and that once racial differences in occupational status are taken into account, there are no differences in income.

Finally, in most non-Black South African groups virtually everyone was competent in English (the major exceptions were southern Europeans and Afrikaans-speaking Coloureds), and many were competent in Afrikaans as well. Among Blacks, however, only about 30% were competent in Afrikaans and just under 40% were competent in English. Thus, again, Blacks faced a severe disadvantage with respect to skill in the dominant languages of the country.

ANALYTIC STRATEGY

To assess the effect of race on socioeconomic achievement, we move from an analysis of the 29 separate ethnic groups shown in Table 1 to an analysis of the four official racial categories. Although, as we have seen, within-race ethnic distinctions are sometimes quite substantial in South Africa, they have never had the force of law. Moreover, with the exception of a few small White ethnic groups, within-race differences are quite small relative to between-race differences. Thus an analysis of racial differences in socioeconomic attainment captures most of what we would observe if we were to conduct a corresponding analysis of all 29 race/ethnic groups.

We begin by formally testing the claim that the four racial groups differ in the process of status attainment. Model 1 in Table 2 posits *no* racial differences in this process in South Africa, in the sense that all observed difference in occupational status or in income can be explained by individual-level factors of the sort that would be expected to create status differences in every society. Model 2 posits equal returns to individual-level factors for each race but across-the-board race differences in the average level of occupational status or income. Model 3 posits that different processes of status attainment operate for each of South Africa's racial groups, in the sense that both the intercepts and the slopes relating each individual-level factor to status outcomes vary across racial groups.

As we will see, we are led to conclude that the processes of both occupational status attainment and income attainment differ for the four racial groups—that is, Model 3 is the preferred model. We assess the sources of these differences for each dependent variable by decomposing racial differences in the mean into a portion due to racial differences in assets—the individual-level factors; a portion due to racial differences in returns to assets; and the interaction between racial differences in assets and racial differences in returns. We elaborate each step in the course of presenting the results. First, however, we must define the variables we include in the analysis.

VARIABLES

Occupational Status

The first dependent variable, occupational status, is measured by the International Socioeconomic Index of Occupations (ISEI), developed by Ganzeboom, De Graaf, and Treiman (1992).[20] This scale, which is closely analogous to the widely

19. Shifts among "Other Whites" between 1980 and 1991 probably reflect changes in the definition of this category, which we could not overcome because of differences in the way information about ethnicity was recorded in the two censuses. On the basis of the number of cases in the sample in each census year, it appears that about 3% of the sample were classified as "Other Whites" in 1980 but as Afrikaners in 1991.

20. The assignment of ISEI scores to occupations so as to achieve comparability between 1980 and 1991 was somewhat problematic because the occupational classification changed radically between the two censuses. The 1980 classification closely followed the 1968 International Standard Classification of Occupations. The 1991 classification, however, introduced ad-

TABLE 2. GOODNESS-OF-FIT STATISTICS FOR MODELS OF OCCUPATIONAL STATUS ATTAINMENT IN SOUTH AFRICA, 1980 AND 1991, MALE LABOR FORCE WITH KNOWN OCCUPATION AND INCOME, AGE 20–64

	1980 (N = 232,067)			1991 (N = 271,960)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
R^2	.4801	.4827	.4856	.4880	.4910	.4933
Standard Error of Estimate	10.013	9.988	9.960	10.630	10.598	10.575
No. of Independent Variables	5	8	23	5	8	23
BIC'	−152,910	−154,046	−155,175	−181,996	−183,556	−184,600
Contrasts	3 vs. 1	3 vs. 2	2 vs. 1	3 vs. 1	3 vs. 2	2 vs. 1
F-ratio	278	176	392	158	82	534
p	< .0001	< .0001	< .0001	< .0001	< .0001	< .0001
BIC difference	2,265	1,129	1,136	2,604	1,044	1,560

used Duncan SEI scale for the United States, was constructed from data from 16 countries by maximizing the link between education and occupational status, on the one hand, and between occupational status and income, on the other. The ISEI, of course, has all the limitations of unidimensional occupational status scales, but nonetheless is suitable for measuring the relative socioeconomic status of occupations, which has been shown to be highly consistent throughout the world (Ganzeboom et al. 1992; Treiman 1977).

We also use the ISEI score as an independent variable in our income equation (see below). This variable ranges from approximately 10 to approximately 90 when the full detail is used. For the regression analyses, to facilitate interpretation of the results, we subtracted 17, the lowest score we assigned to the South African census categories. Thus an ISEI score of 0 is interpretable as the lowest-status occupation in the classification we used. In Table 1, however, we reported the unadjusted means in order to facilitate comparisons with other countries.

Education

The South African educational system includes two years of "pre-school" and then 10 years of school, followed by university or other tertiary-level education. The census also distinguishes between those with and those without school-leaving certificates at various levels. Because persons with certification appear to have higher occupational status and income than those with the same number of years of schooling but no certification, we converted the South African school categories into years of school completed and then added 1.5 years of schooling for those with certificates. We did not, however, add any years for certification at the bachelor's, master's, or doctoral levels. The resulting variable ranges from 0 (for those with no schooling at all) to 19 (for those with a doctoral degree).

To permit the possibility that the value of each additional year of education increases as the level of education increases (see Treiman and Terrell 1975), we also included a squared term for education. We expected that the coefficient associated with this variable would be positive.

Labor Force Experience

Because we have no direct measure of labor force experience, we estimate it in the conventional way, as x = age – years schooling – 6. In view of the chronically high unemployment among Blacks (South Africa Institute of Race Re-

ditional detail with respect to professional occupations but used a highly aggregated classification with respect to the remaining major groups. We achieved a match via a two-step procedure. Our first step was to form a new 74-category classification consisting of those 1980 and 1991 occupation titles which contained the same jobs; we relied on the Central Statistical Service (1980, 1986, 1991c) for information as to which jobs were included in each occupation category. Then we assigned a 1968-basis ISEI score (Ganzeboom et al. 1992) to each category, taking a weighted average of scores assigned to the occupational titles for the year for which we had a better match to the ISCO categories; for 68 of the 74 new occupation categories we used the 1980 classification as our basis for assigning ISEI scores. These procedures produced a reasonably comparable set of scores, with means of 34.4 and 36.6 and standard deviations of 13.9 and 14.8 for 1980 and 1991 respectively. Also, the index of dissimilarity over the 12 major groups listed below in note 29 is only .062. When we consider that the occupational distribution in South Africa probably shifted somewhat over the 11-year period, these results suggest that the ISEI scaling of occupations in the two years is reasonably comparable.

lations 1990), this variable may overstate their labor force experience in relation to that of the other groups.

To permit the possibility that the value of additional labor force experience declines with each additional year of labor force experience (as has been observed elsewhere; e.g., Treiman and Lee 1996; Treiman and Roos 1983), we include a squared term for labor force experience. If South Africa is like other countries in this respect, the coefficient should be negative.

Language Competence

Although, until 1994, English and Afrikaans were the two official languages of South Africa, interpreting the effect of competence in Afrikaans is somewhat problematic. Until recently, English-speaking Whites were of considerably higher socioeconomic status than were Afrikaans-speaking Whites (Treiman forthcoming, ch. 2); this is still true of Coloureds (see Table 1); and Afrikaans was widely regarded as the language of oppression. As a result, many Blacks and most Asians opted for English over Afrikaans when they had the choice.[21] Thus we measure the effect of language competence on socioeconomic attainment by a dummy variable, scored 1 for those who could speak, read, and write English and scored 0 otherwise.

Three employment status variables are included in the income equation, but not in the occupational status equation.

Self-Employment

All else being equal, we expect those who are self-employed to earn more than those who are employees because they are in a position to take profits. For Blacks, however, self-employment might reduce income because a large fraction of the self-employed Blacks work in the informal sector (McKeever 1994).

Government Employment

There are two forms of government employment in South Africa: employment in public administration and employment in government-owned enterprises such as the railroads, the radio and television system, or the electric power and phone companies. Because these two sectors are organized somewhat differently, we consider them separately by creating two dummy variables: each is scored 1 if a man is in the sector in question, and scored 0 otherwise. Expectations regarding the effect of employment in these two sectors are not entirely obvious. On the one hand, South Africa underwent severe inflation from the early 1970s through 1991, and public-sector wages generally lag during inflationary times. On the other, it may be argued that, for Whites, government employment was an aspect of the welfare state, with attendant pressures on the part of the government to maintain high wages (Lipton 1985:212).

Annual Income

In the South African Census, income from all sources, for the 12 months preceding the census, is reported. The 1980 public use file shows income in exact amounts (rand per year) and includes negative and zero values. In the 1991 public use file, annual income is coded in categories: no income, 1–499 rand, ..., 500,000 rand and over . We converted each category to its midpoint and arbitrarily coded the open-ended top category as 700,000.[22] For both years, as noted above, we excluded all of those with negative or zero income. Because of racial differences in unemployment, this decision results in an understatement of racial differences in income. We adopted it, however, in order to focus on income differences in the economically active population; racial differences in labor force participation and employment are left for a different analysis.

To facilitate comparison of our results for 1980 and 1991, a period of rampant inflation, we converted the 1980 income data to the 1991 metric by multiplying by 4.52, the ratio of the 1991 to the 1980 South African Consumer Price Index (Central Statistical Service 1992:8.20). Then we converted income to its natural log. In our preliminary analysis, we estimated our income equations with income expressed alternatively in its metric form and in its log form, and investigated various measures of heteroskedasticity. Because the log form produces a better fit to the data (the R^2s are uniformly higher) and because the distributions of the residuals in the log form are much better behaved, we decided to report the analysis based on the log form of the variable.

RESULTS

Occupational Status

Table 2 shows goodness-of-fit statistics for all three models, with ISEI as the dependent variable. We compare the models

21. The 1975 Soweto school boycott, an important event in the development of Black political consciousness, began as a protest against a plan to substitute Afrikaans for English as the medium of instruction in some Soweto schools (Hirson 1979:174–205; Meredith 1988:144).

22. We considered using the estimate for open-ended upper categories based on the Pareto transform suggested by Miller (1966:215–20) but determined that the distribution of income does not meet the required assumptions.

TABLE 3. COEFFICIENTS OF MODELS OF THE DETERMINANTS OF OCCUPATIONAL STATUS IN SOUTH AFRICA, 1980 AND 1991, MALE LABOR FORCE WITH KNOWN OCCUPATION AND INCOME, AGE 20–64

	White		Asian		Coloured		Black	
	1980	1991	1980	1991	1980	1991	1980	1991
R^2	.307	.286	.367	.324	.415	.469	.243	.335
Standard Error of Estimate	12.50	13.10	9.72	11.395	9.17	9.66	8.97	9.56
BIC'	–20,165	–21,384	–3,710	–4,031	–11,908	–18,426	–41,153	–68,770
Metric Coefficients								
Intercept	10.69	7.41	7.72	9.10	3.61	–.330	5.39	2.50
Education	–1.69	–1.02	–2.26	–2.45	–.124	–.193	–.124	–.506
Education squared	.286	.250	.350	.351	.236	.236	.201	.229
English-language competence	3.69	3.18	5.97	4.72	3.81	4.30	2.02	2.98
Labor force experience	.485	.482	.521	.493	.248	.389	.301	.472
Labor force experience squared	–.00737	–.00657	–.00676	–.00454	–.00332	–.00483	–.00415	–.00622
N	55,136	63,642	8,212	10,414	22,304	29,190	148,037	168,714

with two different test statistics: an *F*-ratio[23] test of the significance of the increment in R^2 and the Bayesian Information Coefficient (*BIC*) (Raftery 1995).[24] In the present case, we are led to prefer Model 3, which posits different processes of occupational status attainment for South Africa's racial groups. Both the *F*-ratios and the *BIC*s are huge by conventional standards, a consequence of the huge sample sizes. This is so even though the R^2s hardly change between Model 1 and Model 3: for both years the increment in R^2 is less than 1%. In short, if we know how much education a man had, how many years have passed since he left school, and whether he is competent at English, we can predict his occupational status virtually as well as if we knew these things and also his race.

The coefficients in Table 2 have two other striking features. First, the R^2s are very large relative to those for most other countries. They imply that about half of the variance in occupational status can be attributed to just three variables: education, labor force experience, and English-language competence, or, alternatively, to these variables plus race. Race alone accounts for about one-quarter of the variance in occupational status (the squared correlation ratios, η^2s, for 1980 and 1991 are respectively .28 and .24). Thus we see a very rigid society in which racial differences in education, experience, and English-language competence account for about one-quarter of the variance in occupational status, and within-race differences in these attributes account for another one-quarter.[25]

Second, these patterns have hardly changed between 1980 and 1991. Whatever moderation of apartheid practices occurred during this period did not involve a reduction of racial differences in the effect of educational attainment or English-language competence on occupational attainment.

Table 3 shows the coefficients for our model of occupational status attainment, separately for each racial group.

23. The *F*-test, which is a conventional way to assess the increment in R^2 in hierarchical models, is calculated as

$$F = \frac{\left(R_B^2 - R_A^2\right)/m}{\left(1 - R_B^2\right)/(N-k-1)},$$

where the subscripts *B* and *A* indicate the two models being compared, with *B* the larger model; m = the number of independent variables in Model B but not in Model A; N = the number of cases; and k = the total number of independent variables in Model B. The numerator degrees of freedom = m; the denominator degrees of freedom = $N - k - 1$.

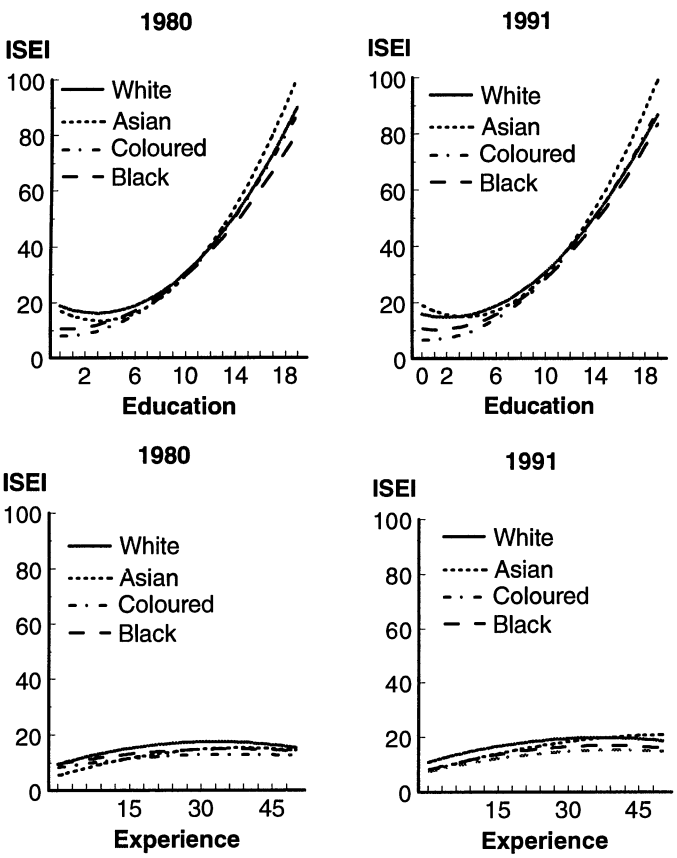
24. *BIC* indicates the relative likelihood that a model is true, given the data. For ordinary least squares models, a variant of *BIC*, *BIC'*, is calculated (for some Model A) as

$$BIC'_A = N\left[\ln\left(1 - R_A^2\right)\right] + p_A\left[\ln(N)\right],$$

where N is the number of cases and p is the number of independent variables in the model. When models are compared, the model with the most negative value of *BIC'* is the most likely to be true, given the data.

25. One must be cautious about making too much of the differences in R^2s across samples because their size depends on the variance in the dependent variable as well as on the degree of dispersion around the regression

FIGURE 1. EFFECTS ON OCCUPATIONAL ATTAINMENT: EDUCATION AND EXPERIENCE, 1980 AND 1991



These results are largely unremarkable: each of the independent variables behaves as predicted, although some of the effects are very small. Occupational status increases with education, and each additional year of education is worth more than the preceding year (because the coefficient of the squared term is uniformly positive);[26] occupational status increases with work experience, but at a decreasing rate (because the coefficient of the squared term is uniformly negative); and English-language competence enhances occupational status, but not by much, because the advantage of being able to read, write, and speak English ranges from about two to about six ISEI points.

Of these three factors, years of schooling completed is by far the most important. This is evident in Figure 1, which shows for each race the effect of education and (potential) labor force experience on occupational status.[27] The effect of education is clearly very substantial, and is also very similar across racial groups; it differs only at the extremes of the distribution. Although the lowest levels of the distribution should not be taken seriously for Whites and Asians, because only very small fractions of the population so totally lack education, it appears that a floor on occupational status exists for these two groups, in contrast to Coloureds and Blacks: Whites and Asians, no matter how poorly educated, virtually never do agricultural labor or domestic service, the really low-status work in South African society. Similarly, the divergence at the high end of the distribution is substantively unimportant because only very small fractions of non-Whites have so much education.

By contrast, the net effect of labor force experience is quite modest. It may be that in a society rigidly stratified on racial lines, one's initial position determines one's lifetime position, with little room for advancement for the majority of the population (and little risk of downward mobility for even incompetent Whites). Again, this finding contrasts to those for other industrialized countries, in which occupational status typically shows substantial gains over the course of the career (e.g. Sørensen 1975:463).

Perhaps the most striking feature of Table 3 (and Figure 1) is the similarity in the results for 1980 and 1991. The implication is clear: the fundamental structure of occupational opportunity changed little in South Africa during the 1980s, despite some narrowing of racial differences in education (observable in Table 1).

line. For this reason, the standard error of estimate (SEE)—which is simply the square root of the average squared error in prediction—is perhaps a more valid measure of the degree of societal rigidity (if the variables being compared have the same metric across societies). Although we have no precisely comparable data, a rough comparison with the United States is possible. Featherman and Hauser (1978:256), in their analysis of the occupational attainment of men age 25–64 in 1962 and 1973, predicted Duncan SEI scores, which have a distribution similar to the ISEI, from eight variables, with SEEs nearly twice as large as ours: 18.4 and 19.1 respectively for 1962 and 1973, compared with 10.0 for the three 1980 coefficients in Table 2 and 10.6 for the three 1991 coefficients. We conclude that occupational status is predicted on the basis of a handful of variables more accurately in South Africa than in the United States and that, in this precise sense, South Africa is a more rigid society.

26. The negative coefficients associated with the main term for education should not be interpreted substantively; they are an artifact of the scaling of the variables, as is evident from inspection of Figure 1.

27. These graphs are created by evaluating the effects of education and experience, respectively, at the mean of each of the other independent variables. The very low values for experience may appear anomalous, but they result simply from the fact that the mean level of education for the entire male labor force is so low—4.8 years—that education contributes very little to the intercept.

This finding is also evident in the decomposition of the mean difference in occupational status between Whites and each of the other groups, shown in the two panels of Table 4. This table decomposes the racial difference in occupational status into a portion due to the difference in average "assets" (education, experience, and English-language competence), a portion due to differences in returns to these assets, and the interaction between differences in assets and differences in rates of return (Jones and Kelley 1984). In each case, we calculated Decomposition 1 by using Whites as the standard—that is, by multiplying the White means by the differences in slopes and the White slopes by the differences in means. We calculated Decomposition 2 by using the other group as the standard.

Already by 1980, racial differences in occupational status were attributable mainly to racial differences in education. Comparing the "Differences in Education Assets" line of Part A of Table 4 with the "Total Difference" line, we see that the White-Asian difference in occupational status is actually slightly smaller than would be expected from the difference in their mean level of education: the difference in mean education implies an occupational status gap 1 to 16% larger than the observed gap, depending on which decomposition is used, whereas racial differences in English-language competence and labor force experience contribute virtually nothing.

For Coloureds, 63 to 87% of the gap can be attributed to differences in average education, and an additional 9 to 10% to differences in the proportion competent in English; differences in all assets taken together account for 71 to 96% of the gap.

For Blacks, 61 to 82% of the gap can be attributed to differences in average education, and an additional 7 to 13% to differences in the proportion competent in English; differences in all assets taken together account for 72 to 87% of the gap.

These computations suggest that by 1980 the "industrial colour bar"—the denial of occupational opportunities to qualified workers on the basis of race (Lipton 1985:63–64)—was no longer an important feature of the South African labor market. Rather, the major source of occupational differentiation was educational discrimination—the denial of equal educational opportunities to all of South Africa's non-White groups, but especially to Coloureds and even more especially to Blacks.

The structure of occupational differentiation remained qualitatively similar in 1991: educational differences were the dominant factor in accounting for racial differences in occupational status, but differences in English-language competence were of some importance for Coloureds and Blacks. (See Table 4, Part B.) Again, Asians did better than would be expected from their assets, which imply a mean difference in occupational status 9 to 18% larger than the observed difference. For Coloureds, 75 to 95% of the gap can be attributed to differences in average assets. For Blacks, the corresponding figures are 80 to 87%. As shown in Table 1, the educational gap closed somewhat between 1980 and 1991, but not enough to substantially alter the structure of occupational attainment.

Income

Can racial differences in income likewise be explained by racial differences in individual assets and occupational status? If so, we would have a society in which racial differences in socioeconomic outcomes were due almost entirely to premarket factors. As we shall see, however, the reality is not nearly so simple. We start as we did in our analysis of occupational status, by comparing three hierarchical models of income determination. Our independent variables are those used in the occupational status analysis plus occupational status (the ISEI score) and three indicators of employment status: whether a man was self-employed, was employed in public administration, or was employed in a public enterprise. The omitted category thus consists of employees in the private sector.

Table 5 shows goodness-of-fit statistics for our three models. We see a striking contrast with the corresponding statistics in Table 2, where occupational status is the dependent variable. Here it is unambiguous that the process of income attainment varies across racial groups. The explained variance increases substantially between Model 1, which posits no racial differences in the process by which income is obtained, and Model 3, which posits a separate process for each racial group. From this increase, and from the almost equally large increase for Model 2, it is evident that even among those who are equally qualified and have jobs of similar status, pronounced racial differences in income were present in both 1980 and 1991.

In 1980 about two-thirds of the variance in income could be explained by a handful of factors: education, experience, English-language skill, occupational and employment status, and, of course, race. In 1991 more than half of the variance could be explained by the same set of factors. Moreover, in 1980 more than half of the variance in income could be explained by race alone (η^2, the correlation ratio of income with the racial categories, = .54). Even by 1991, nearly 40% of the variance in income still could be attributed to race alone ($\eta^2 = .38$).

Once again, South Africa appears to be an unusually rigid society, particularly in 1980 but also in 1991. For example, Hirschman (1975:64–65) could account for only

TABLE 4. DECOMPOSITION OF THE DIFFERENCE IN MEAN OCCUPATIONAL STATUS (ISEI) BETWEEN WHITES AND EACH OF THE THREE NON-WHITE RACIAL GROUPS, 1980 AND 1991

	Asian		Coloured		Black	
	1[a]	2	1	2	1	2
PART A: 1980						
Total Difference	6.02		14.97		17.26	
Difference in Assets						
Education[b]	6.09	7.01	9.42	13.06	10.57	14.16
English-language competence	−.01	−.01	1.38	1.43	2.30	1.26
Labor force experience	.0016	.022	−.21	−.14	−.49	−.38
Total due to difference in assets	6.08	7.02	10.59	14.35	12.38	15.04
Difference in Returns to Assets						
Education	−.057	.35	−9.05	−5.40	−6.75	−3.16
English-language competence	−2.20	−2.21	−.11	−.068	1.62	.58
Labor force experience	−1.22	−1.20	2.69	2.76	2.04	2.15
Intercept	2.46	2.98	7.09	7.09	5.31	5.31
Total due to difference in returns	−1.02	−.08	.62	4.38	2.22	4.88
Interaction						
Education	.92	−.92	3.65	−3.65	3.58	−3.58
English-language competence	−.00	.00	.04	−.04	−1.04	1.04
Labor force experience	.02	−.02	.07	−.07	.11	−.11
Total due to interaction	.94	−.94	3.76	−3.76	2.65	−2.65
PART B: 1991						
Total Difference	4.53		15.78		17.06	
Difference in Assets						
Education[b]	4.89	5.28	10.64	13.26	12.47	13.71
English-language competence	−.06	−.084	1.30	1.75	1.85	1.73
Labor force experience	.12	.15	−.082	−.084	−.61	−.64
Total due to difference in assets	4.95	5.35	11.86	14.93	13.71	14.80
Difference in Returns to Assets						
Education	3.92	4.31	−6.79	−4.17	−2.84	−1.60
English-language competence	−1.49	−1.52	−1.08	−.63	.19	.078
Labor force experience	−1.56	−1.52	.97	.96	.0029	−.024
Intercept	−1.69	−1.69	7.74	7.74	4.91	4.91
Total due to difference in returns	−.82	−.42	.84	3.90	2.26	3.36
Interaction						
Education	.39	−.39	2.62	−2.62	1.24	−1.24
English-language competence	−.03	.03	.46	−.46	−.12	.12
Labor force experience	.03	−.03	−.00	.00	−.03	.03
Total due to interaction	.39	−.39	3.08	−3.08	1.09	−1.09

[a]1 = Decomposition using Whites as the standard—that is, multiplying the White means by the differences in slopes and the White slopes by differences in means; 2 = decomposition using the other group as the standard.

[b]The effects of education and education squared are shown together because they cannot be separated meaningfully. The same is true of labor force experience.

TABLE 5. GOODNESS-OF-FIT STATISTICS FOR MODELS OF INCOME IN SOUTH AFRICA, 1980 AND 1991, MALE LABOR FORCE WITH KNOWN OCCUPATION AND INCOME, AGE 20–64A

	980 (N = 232,067)			1991 (N = 271,960)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
R^2	.5684	.6578	.6730	.4681	.5310	.5428
Standard Error of Estimate	.7590	.6758	.6607	.8957	.8411	.8304
No. of Independent Variables	9	12	39	9	12	39
BIC'	–196,391	–250,634	–260,925	–171,576	–205,765	–212,357
Contrasts	3 vs. 1	3 vs. 2	2 vs. 1	3 vs. 1	3 vs. 2	2 vs. 1
F-ratio	4,987	805	40,730	1,481	260	12,157
p	< .0001	< .0001	< .0001	< .0001	< .0001	< .0001
BIC difference	64,534	10,291	54,243	40,781	6,592	34,189

[a] The dependent variable is the natural log of annual income in the previous year, in South African rand.

about half of the variance in income in Malaysia with a somewhat larger set of independent variables, including both ethnicity and a set of dummy variables for occupational categories. (Note that occupational categories tend to explain substantially more variance than undimensional occupational status scales.) Studies conducted in industrialized countries typically show still weaker effects. Treiman and Roos (1983:612–50), in a comparison of nine industrialized countries, found an average $R^2 = .41$ for their equations for males, again using a set of dummy variables for occupation categories.

Table 6 shows the coefficients of our model of income determination, separately for each race. Again, we find no surprises. Because income is expressed in log form, the coefficients are interpretable as indicating the approximate percentage increase in income expected for a unit increase in the independent variable, except in the case of the two variables involving squared terms.

English-language competence has a strong positive effect on income for all groups except Blacks. In both 1980 and 1991 Whites who were competent in English earned about 25% more than those who were not, net of all other factors. Although almost all Whites were competent in English (97%, as we see in Table 1), the cost was substantial for those few who were not. The same was true for Asians in 1980, but the effect was reduced in 1991. For Coloureds, just over half of whom were competent in English, the advantage was even larger—an increase in income by about one-third, net of all other factors. In comparison with the other three groups, Blacks gained less advantage from English-language competence in 1980 (about 10%); they gained virtually no advantage in 1991. Why this is so is unclear because English-language skill was still relatively rare among Blacks by 1991; about 40% were competent in English in 1991, up from about one-third in 1980. One possibility is that Blacks were employed at jobs for which English was not particularly useful.

Self-employment created a substantial advantage for Whites and Asians in 1980 (about 16% and 20% respectively), but only a slight advantage by 1991. For Coloureds, self-employment yielded no advantage in 1980 and a slight disadvantage by 1991. For Blacks, the effect of self-employment was substantially negative: in 1980 self-employed Blacks earned only about 79% of what other Blacks earned, net of other factors, and in 1991 only about 76%. We would expect this result because most of Blacks' self-employment is in the informal sector (McKeever 1994). Why the advantage of self-employment systematically declined between 1980 and 1991 is unclear because one might expect the self-employed to do particularly well in periods of rampant inflation.

The effects of public employment present a more complicated picture, but the broad patterns can be summarized easily: employment in public administration had a substantial negative effect on income for Whites in both years, but little impact on the other groups. This outcome reinforces our image of public administration as a haven for Whites who are unable to compete in the private sector. Employment in public enterprise had little effect on Whites' incomes in either year, a strong positive impact on the incomes of Asians and

TABLE 6. COEFFICIENTS OF MODELS OF THE DETERMINANTS OF INCOME IN SOUTH AFRICA, 1980 AND 1991, MALE LABOR FORCE WITH KNOWN OCCUPATION AND INCOME, AGE 20–64

	White		Asian		Coloured		African	
	1980	1991	1980	1991	1980	1991	1980	1991
R^2	.294	.292	.343	.253	.423	.418	.255	.208
Standard Error of Estimates	.634	.773	.555	.843	.681	.765	.673	.861
BIC'	–19,097	–21,877	–3,369	–2,954	–12,175	–15,708	–43,471	–39,235
Metric Coefficients								
Intercept	8.45	7.56	7.86	7.51	7.42	7.05	7.54	7.32
Education	.0609	.124	.0295	.00442	.0711	.0622	.0757	.0617
Education squared	.00165	.000860	.00558	.00915	.0023	.00462	–.00394	.000256
English-language competence	.261	.230	.215	.153	.352	.333	.102	.0293
Labor force experience	.0775	.0890	.0477	.0646	.0440	.0564	.0304	.0439
Labor force experience squared	–.00121	–.00138	–.000654	–.000956	–.000624	–.000795	–.000458	–.000612
Self-employed	.155	.0289	.204	.0332	.0190	–.0520	–.240	–.276
Employed in public administration	–.311	–.273	–.107	–.00735	–.0231	–.00667	–.0212	–.0627
Employed in public enterprise	–.0370	.0117	.0607	.188	.0542	.294	.231	.226
Occupational status (ISEI)	.00810	.00977	.0130	.0125	.0213	.0197	.0285	.0264

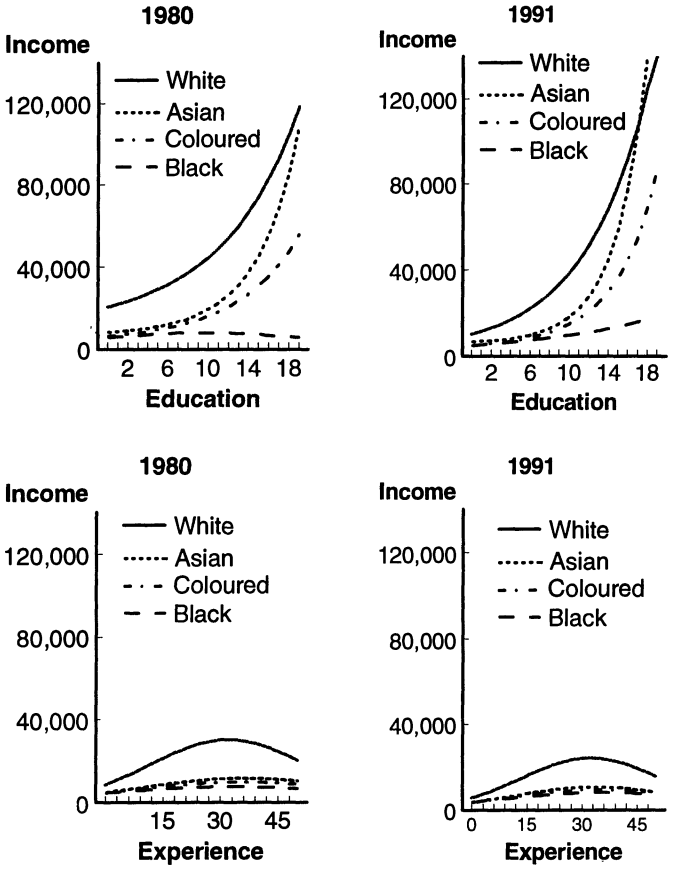
Coloureds in 1991 but not in 1980, and strong positive effects on Blacks' incomes in both 1980 and 1991. It may be that during this period public enterprises were moving toward a nonracial incomes policy, which would drive up non-Whites' incomes. This is only a conjecture, however, and further exploration of this issue is beyond the scope of this paper.

The impact of occupational status on income is positive for all groups and all years, as expected. More interesting, the size of the coefficients increases monotonically across the four racial groups: it is weakest for Whites and strongest for Blacks. For Whites, an increase in 17 ISEI points (the difference between a skilled craftsman and a manager) would imply an 18% ($=(e^{.00977})^{17}$) increase in income in 1991, net of all other factors, whereas for Blacks an increase of 17 ISEI points would imply a 57% increase in income. This finding suggests that the racial gap in income is closing more rapidly at the top end of the occupational hierarchy than at the bottom end (although, as we will see, the racial gap is still very large).

Figure 2 shows the net effects of years of school completed and years of labor force experience on income, for 1980 and 1991.[28] In contrast to the corresponding graphs for the determinants of occupational status, the impact of race on income attainment is very substantial. First, especially in 1980, we find a very strong net effect of race on income; this will be quantified in the decomposition to be presented

28. In these figures, education and experience were evaluated at the means of the remaining variables in the equation, except that all workers were assumed to be private-sector wage workers. That is, the values of the dummy variables for self-employment and the two forms of government employment were set to 0.

FIGURE 2. EFFECTS ON INCOME: EDUCATION AND EXPERIENCE, 1980 AND 1991



Note: Income is expressed in 1991 rand.

shortly. Second, labor force experience has a modest (curvilinear) effect on income for Whites, but virtually none for the remaining groups. These results are similar to experience-earnings curves for men and women in industrialized societies, in which returns to experience are substantially stronger for men. Finally, in sharp contrast to the effect of occupational status on income, which we saw above, education has a much stronger effect on income for Whites and Asians than for Coloureds and Blacks. For Whites and Asians the effect on income increases strongly as years of education increase; this also is true to a modest degree for Coloureds; but Blacks showed virtually no monetary returns to education in 1980 and only an extremely small linear effect in 1991.

When the results for education and occupational status are taken together, it is evident that for Blacks the only route to economic advantage is to convert their education into high-status jobs; failing that, they can expect to be paid no more than their least well-educated cousins. In contrast, more education in the three other groups buys higher income regardless of the status of one's job—as it typically does for men in industrialized societies (Treiman and Roos 1983, Table 5).

Table 7 shows a decomposition of the difference in mean income between Whites and each of the other groups. In 1980 the difference in the means of the natural log of income for Whites and for Asians was 1.00, which implies that on average Asians earned 37% as much as Whites (because $.368 = 1/e^{1.00}$). By 1991 the ratio of Asians' to Whites' income had increased slightly, to 40%. Similar computations show that Coloured workers' incomes were 20% of Whites' incomes in both 1980 and 1991 and that Blacks' incomes were 13% of Whites' in 1980 and 16% in 1991.

Decomposing the differences in the log incomes, we see that in sharp contrast to the results for occupational status, racial differences in income are *not* explained substantially by racial differences in assets or occupational status. For Asians, between 23 (= (.23/1.00) × 100) and 34% (= (.34/1.00) × 100) of the total difference in 1980 and between 28 and 37% of the total difference in 1991 is attributable to differences in the factors determining income, primarily education and (to a minor extent) occupational status. The remainder is attributable to racial differences in returns to these factors and to the interactions between compositional differences (that is, differences in mean assets and mean occupational status) and differences in returns. The results are similar for Coloureds and for Blacks. For Coloureds, 36 to 56% of the 1980 difference and 50 to 62% of the 1991 difference can be attributed to differences in assets and occupational status. For Blacks, 34 to 36% of the 1980 difference and 41 to 52% of the 1991 difference can be attributed to these differences. For Coloureds, as for Asians, inferior education is the dominant compositional factor accounting for the income gap relative to Whites, but differences in occupational status and English-language competence are important as well.

For Blacks, more than for the other groups, the two decompositions yield somewhat different results. In the first decomposition, the differences in mean assets are evaluated with respect to the White slopes; for the second decomposition, they are evaluated with respect to the Black slopes. Because the returns to education are much greater for Whites than for Blacks (recall Figure 2), the effect of the difference between Whites' and Blacks' mean education is magnified in the first decomposition relative to the second. The same explanation holds with respect to English-language compe-

TABLE 7. DECOMPOSITION OF THE DIFFERENCE IN MEAN INCOME BETWEEN WHITES AND EACH OF THE THREE NON-WHITE RACIAL GROUPS, 1980 AND 1991.

	Asian		Coloured		Black	
	1[a]	2	1	2	1	2
PART A: 1980						
Observed Difference	1.00		1.62		2.05	
Portion Due to Difference in Assets						
Education[b]	.20	.26	.38	.47	.51	.19
English-language competence	−.00	−.00	.10	.13	.16	.06
Labor force experience	−.00	.00	−.03	−.02	−.07	−.03
Self-employment	.00	.01	.02	.00	.02	−.03
Employment in public administration	−.02	−.01	−.01	−.00	−.02	−.00
Employment in public enterprise	−.00	.01	−.00	.01	−.00	.02
Occupational status (ISEI)	.05	.08	.12	.32	.14	.49
Total due to difference in assets	.23	.34	.58	.91	.74	.70
Portion Due to Difference in Returns to Assets						
Education	−.07	−.01	−.15	−.07	.38	.06
English-language competence	.04	.04	−.09	−.05	.15	.06
Labor force experience	.31	.31	.37	.38	.57	.61
Self-employment	−.01	−.01	.02	.00	.06	.01
Employment in public administration	−.04	−.02	−.05	−.05	−.05	−.04
Employment in public enterprise	−.02	−.00	−.01	−.00	−.04	−.02
Occupational status (ISEI)	−.15	−.12	−.41	−.21	−.63	−.28
Intercept	.59	.59	1.03	1.03	.91	.91
Total due to difference in returns	.65	.78	.71	1.03	1.35	1.31
Portion Due to Interaction						
Education	.06	−.06	.09	−.09	−.32	.32
English-language competence	.00	−.00	.03	−.03	−.10	.10
Labor force experience	.00	−.00	.01	−.01	.04	−.04
Self-employment	.00	−.00	−.02	.02	−.05	.05
Employment in public administration	.02	−.02	.01	−.01	.02	−.02
Employment in public enterprise	.01	−.01	.01	−.01	.02	−.02
Occupational status (ISEI)	.03	−.03	.20	−.20	.35	−.35
Total due to interaction	.12	−.12	.33	−.33	−.04	.04

(Continued on next page)

(Table 7 continued from previous page)

	Asian		Coloured		Black	
	1[a]	2	1	2	1	2
PART B: 1991						
Observed Ratio	.92		1.60		1.84	
Portion Due to Difference in Assets						
Education[b]	.21	.24	.57	.54	.74	.36
English-language competence	−.00	−.00	.09	.15	.13	.02
Labor force experience	.02	.02	−.01	−.01	−.08	−.05
Self-employment	.00	.00	.00	−.01	.00	−.04
Employment in public administration	−.01	−.00	−.00	−.00	−.01	−.00
Employment in public enterprise	.00	.02	.00	.02	.00	.02
Occupational status (ISEI)	.04	.06	.15	.31	.17	.45
Total due to difference in assets	.26	.34	.80	1.00	.95	.76
Portion Due to Difference in Returns to Assets						
Education	.33	.36	.22	.19	.68	.30
English-language competence	.08	.08	−.10	−.06	.19	.08
Labor force experience	.28	.28	.36	.36	.52	.55
Self-employment	−.00	−.00	.02	.00	.06	.02
Employment in public administration	−.04	−.03	−.04	−.04	−.04	−.02
Employment in public enterprise	−.02	−.00	−.03	−.01	−.02	−.01
Occupational status (ISEI)	−.09	−.08	−.33	−.17	−.55	−.27
Intercept	.05	.05	.51	.51	.24	.24
Total due to difference in returns	.59	.66	.61	.78	1.08	.89
Portion Due to Interaction						
Education	.03	−.03	−.03	.03	−.38	.38
English-language competence	.00	−.00	.04	−.04	−.12	.12
Labor force experience	−.00	.00	.00	−.00	.03	−.03
Self-employment	.00	−.00	−.01	.01	−.05	.05
Employment in public administration	.01	−.01	.00	−.00	.01	−.01
Employment in public enterprise	.02	−.02	.02	−.02	.02	−.02
Occupational status (ISEI)	.01	−.01	.16	−.16	.28	−.28
Total due to interaction	.07	−.07	.18	−.18	−.21	.21

[a]1 = Decomposition using Whites as the standard—that is, multiplying the White means by the differences in slopes and the White slopes by differences in means; 2 = decomposition using the other group as the standard.

[b]The effects of education and education squared are shown together because they cannot be separated meaningfully. The same is true of labor force experience.

tence (recall Table 6). By contrast, the income return for each additional ISEI point is much greater for Blacks than for Whites (recall Table 6). Thus the effect of Blacks' lower average occupational status is magnified in the second decomposition relative to the first, and accounts for more of Blacks' income disadvantage than does Blacks' educational disadvantage. In the present context, we would be inclined to give more weight to the first decomposition than to the second, because it is the White socioeconomic standard to which the disadvantaged majority of South Africa's population aspires.[29]

CONCLUSIONS

That the apartheid system advantaged Whites at the expense of the remainder of South Africa's population is not news. How this was done, however, has not been entirely clear. We knew that in the course of South African history, educational opportunities had been separate and unequal. We knew also that historically there had been an industrial color bar —the restriction of occupational opportunities based on race—but that in the 1970s this began to break down under the pressure of the demand for skilled labor. We knew, finally, that there were racial differences in income, but we did not know to what extent these simply reflected racial differences in educational attainment and occupational status.

Our analysis here has helped to specify the locus of racial differentiation in socioeconomic achievement. We have shown that racial differences in occupational status can be explained largely by racial differences in education and by other individual assets of the kind that determine people's jobs in all industrialized societies. This is not true of racial differences in income, however: overall, about one-third to one-half of the difference in income between Whites and each of the other groups can be attributed to differences in assets, and the portion of the gap due to these differences increases slightly over time. It seems clear, then, that the effects of apartheid policies and practices have been, first, to create very large racial differences in educational attainment, and second, to ensure that Whites are advantaged with respect to income at the expense of the majority of the South African population.

Exactly how this was accomplished has yet to be determined. Between 1980 and 1991, there were modest reductions in racial differences with respect to all three factors of interest here—education, occupational status, and income—but only modest increases in the extent to which racial differences could be explained by the attributes that determine occupational and income attainment in open societies. These changes call for explanation of the mechanisms involved.

A reasonable first hypothesis is that social change tends to occur mainly among the young, as successive cohorts enter the labor force with greater education and new opportunities. This, however, does not appear to explain how the process of racial convergence is occurring in South Africa, as Table 8 makes clear. Comparisons of 1980–1991 differences in education, occupational status, and income in a cohort of young men and in the total male labor force show that the increase in education among Coloureds and Blacks is slightly greater in the young cohort, but that changes in occupational status and income in fact are smaller in the young cohort than in the male labor force as a whole. We are exploring this issue in greater detail in a cohort comparison currently in preparation.[30]

That reductions in the importance of race and ethnicity are so systematic is a sign of hope. That they are so small must give us pause, both as analysts and as sympathetic observers of South Africa's new dispensation. The system of racial advantage had hardly crumbled from within at the end of the apartheid era. The vast remaining racial difference in

29. It might be objected that in South Africa the effect of people's work on their life chances is not represented accurately by a single unidimensional scale. To consider this possibility we replicated the analysis reported in Tables 6 and 7, substituting dummy variables for 11 of the following 12 occupational categories for the ISEI scale:

Professionals and technicians, Managers, Other nonmanual, Nondomestic service, Domestic service, Farmers and farm managers, Other agricultural, Skilled manual, Production supervisors, Mine workers, Semiskilled manual, Unskilled manual (omitted category). The results (tables available from the senior author on request) for Whites, Asians, and Coloureds are substantially similar to those reported in Tables 6 and 7. For Blacks, by contrast, the increases in explained variance are quite substantial (.126 in 1980 and .095 in 1991), as are the *BIC'* differences. These large increments suggest that for Blacks, occupational sectors are differentiated with respect to income in a manner not captured by the overall socioeconomic status of occupations. In fact, net of other factors, managers, production supervisors, and mine workers are the most highly paid among all Black workers: in 1991 they earned more than half again as much as otherwise comparable unskilled workers. All of these coefficients are substantially larger in 1991 than in 1980, especially for production supervisors and mine workers. Also, the coefficient for domestic service workers is substantially more negative in 1991 than in 1980. This pattern of shifts in the coefficients strongly suggests that Black workers' income distribution became substantially more unequal between 1980 and 1991. Mine workers and those with supervisory responsibility (managers and production supervisors) made gains, perhaps because of Black Advancement policies in the corporate sector, which were introduced in the 1980s (Lipton 1985:227–28), and those in domestic service lagged farthest behind.

30. The data in Table 8 for the young cohort are taken from Treiman and McKeever, "Changes in Racial Stratification in South Africa, 1980-1991: A Cohort Analysis," in preparation. This explains why we report figures for a slightly odd cohort, men age 21–31; in our cohort analysis we divided the male labor force into four 11-year cohorts in order to make exact inter- and intracohort comparisons between 1980 and 1991. The data for the total male labor force are taken from Table 1.

TABLE 8. COMPARISON OF CHANGES IN MEAN SOCIOECONOMIC STATUS LEVELS BETWEEN 1980 AND 1991 FOR TOTAL LABOR MALE LABOR FORCE AGE 20–64 AND MALE LABOR FORCE AGE 21–31

	Total Men: 20–64			Young Men: 21–31		
	1980	1991	Difference	1980	1991	Difference
YEARS OF SCHOOL						
White	9.3	10.0	.7	9.6	10.2	.6
Asian	7.0	8.5	1.5	7.8	9.4	1.6
Coloured	4.7	5.8	1.1	5.1	6.5	1.4
Black	3.0	4.5	1.5	3.5	5.3	1.8
ISEI						
White	47.0	49.0	2.0	45.7	46.8	1.1
Asian	40.9	45.5	4.6	41.1	43.8	2.7
Coloured	32.0	33.2	1.2	32.5	33.7	1.2
Black	29.7	31.9	2.2	30.0	32.0	2.0
INCOME						
White	50,014	52,450	2,436	37,509	34,826	–2,683
Asian	18,408	22,773	4,365	16,451	18,423	1,972
Coloured	11,274	11,857	583	10,696	10,675	–21
Black	6,609	8,294	1,685	6,411	7,995	1,584

human capital makes the reduction of occupational differentiation extremely difficult, at least in the short run, despite considerable political pressure to replace Whites with Blacks in management positions in the public sector. The remaining occupational differentiation will make the reduction of income inequalities a formidable task unless the income tax structure is revised in a steeply progressive direction. The new government has been reluctant to consider this possibility because of its interest in stemming and reversing the flight of capital. Our analysis makes evident that the road to racial equality will be long and difficult.

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