

SECOND CARNEGIE INQUIRY INTO POVERTY
AND DEVELOPMENT IN SOUTHERN AFRICA

State, education and income
inequality: Quantitative
explorations of social inequality

by

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INTRODUCTION

A common proclamation of business and government in contemporary South Africa is that it has become desirable to elevate the concept of meritocracy to the status of a central organising principle of rewarding individuals. The concept of meritocracy rests on a fairly simple claim: that individuals should receive rewards (including income rewards) on the basis of performance. Performance, in these terms, should be evaluated by universal standards of achievement and not by standards that are particularistic and ascriptive. Such a principle, historically part of the vocabulary of market capitalism and political liberalism, offers a critique of reward systems based, amongst others, on racial and gender distinctions.

The increasing emphasis on meritocracy stands in stark and radical contrast to what has been the historical record of South Africa. Race and gender, eminently ascriptive social phenomena, have been systematically related to reward systems. In particular, wage levels have been tied up with race and gender, so that discrimination rather than meritocracy more accurately describes the nature of labor markets, income distribution and status allocation. The claim that merit rather than discrimination should be the guiding principle of reward allocation is enough of a radical shift in government and business ideology to warrant serious scrutiny of the dynamics of income distribution.

Related to the meritocratic claim has been government's attempt, encouraged also by business, to systematically credentialise the black

population - especially since 1976. Since formal educational credentials are probably the most central, universal standard of individual evaluation, government's commitment to more extensive public education for blacks is a necessary corollary to the meritocratic ideology. Furthermore, for the meritocratic claim to mean anything at all, all ascriptive barriers to entering given occupations and avenues of occupational mobility should dissolve and be replaced by a single, legitimate (universally recognised) standard of evaluation: the standard of formal education. In other words, government intervention in the economy, premised on a meritocratic ideology (however dubious its integrity) can also be construed as a strategy of development, a means by which the living standards of (particularly black) people can be raised.

If the meritocratic ideology can be construed as a strategy of development, then the central social mechanism available to government in such a pursuit is that of formal educational credentialing. That is, schooling (considered here as a state-provided "public good") is the central means by which black people can be made eligible for meritocratic principles of evaluation and advancement.

In this paper I want to assess the viability of these claims by systematically investigating the relation between education, gender and race in the income determination process. If the meritocratic ideology has any (contemporary) validity to it, then we would intuitively expect the significance (in income terms) of race and gender to decline with rising education levels. Does this intuition rest on any empirical grounds ?

THE DISTRIBUTION OF FORMAL EDUCATION

The distribution of education credentials in the population is racially biased. It comes as no surprise that the majority of the black working population is in possession of less than eight years of formal education. According to the Current Population Survey (CPS), 36.11% of the black population have less than 3 years of formal education, 32.34% have between 4 and 7 years, 27.07% have between 8 and 11 years and 4.47% have 12 years and more. * (See Table 1 on page 4). A similar pattern is evident for the "coloured" population. In the year 1980, the majority of black and "coloured" persons were not in possession of more than 8 years of formal education. (See Table 1 on page 4).

Although the differences are not that great, there were more "coloured" persons with 12+ years of education (9.3%) than was the case with black persons (4.47%). Also, females have a slight edge over males, 7.82% and 5.44% respectively, in the 12+ category. None of these distributions come as any real surprise although the degree of black-"coloured" homogeneity does raise some questions about the real effects on the actual acquisition of education credentials. "Coloured" persons do not seem much better off on the level of

* The data for this study is derived from the Current Population Survey (CPS) of the Department of Statistics for May 1980. This is monthly survey based on two stratified (panel) samples - a black (African) sample of 10 000 households and a "coloured" sample of 5 000 households. The employed individuals (25 088) of these households provided the raw materials for this analysis. The reworked (regression) data is taken, with some modification, from Lieb Loots & Wilmot James DETERMINANTS OF INCOME: SOUTH AFRICA, 1980. African Studies Seminar Series. Paper 9-83. Centre for Research on Africa. UWC.

TABLE 1
EDUCATION AND GENDER, RACE
FREQUENCY DISTRIBUTION

	YEARS OF EDUCATION				
	4-3	4-7	8-11	12+	TOTAL
MALE	5344(69.46%) 33.87%	5110(64.69) 32.39%	4465(58.25) 28.3%	859(54.85) 5.44%	15778 100%
FEMALE	2347(30.52%) 25.96%	2789(35.31) 30.85%	3199(41.75) 35.38%	707(45.14) 7.82%	9042 100%
TOTAL	7691(100%) 29.92%	7899(100) 31.62%	7664(100) 31.84%	1566(100) 6.64%	24820 100%
COLOURED	1943(25.26%) 21.19%	3019(36.96) 32.93%	3353(43.76) 36.57%	853(54.47) 9.3%	9168 100%
BLACK	5748(74.74%) 36.11%	5150(63.04) 32.34%	4309(56.24) 27.07%	713(45.53) 4.47%	15920 100%
TOTAL	7691(100%) 28.65%	8169(100) 32.63%	7762(100) 31.82%	1566(100) 6.89%	25088 100%

certification despite superior access to formal educational institutions.

If we were to take the same population and differentiate it by occupational clustering then the following distributions emerge.* Most workers have less than 11 years of education (94.35%), most managers and supervisors have less than 11 years of education (94.35%) and most professionals have between 8 and 12+ years of education (90.1%). Of all the

* The differentiation of the population by occupational groups or clustering is not just a matter of convenient and arbitrary separation. It is informed by the claim that occupational group, independently of all else, generates significant income differences. To test the "occupational effect" on income, regression coefficients were calculated for workers on the one hand, and managers on the other. These two linear regression models were then tested for independence. The two equations have the form:

$$Y_i = C_i + B_{Si}S + B_{Ei}E + B_{Gi}G + B_{Ri}R + B_{Ai}A$$

where $i = w(\text{workers}), m(\text{managers})$
 $Y = \text{hourly earnings in cents (1/100 Rand)}$
 $C = \text{constant}$
 $S = \text{occupational status index (1 to 100)}$
 $E = \text{years of schooling completed}$
 $G = \text{gender (0=female, 1=male)}$
 $R = \text{race (0=black African, 1=coloured)}$
 $A = \text{age in years}$

Based on the results of a stepwise regression, a F-test of independence was performed for the null hypothesis:

$$B_{SW} = B_{SM}, B_{EW} = B_{EM}, \dots, B_{AW} = B_{AM}$$

The regression models were found to be independent at a level of significance of less than 0.01 ($F=28.02$ and $F_{372,24709}, = 0.01 = 1,2$). On this basis, it was found to be entirely justifiable to make a differentiation between occupational groups.

occupational categories, 2.07% of workers have 12+ years of education, 5.65% of managers and supervisors have 12+ years and 46.58% of all professionals have 12+ years. (See Table 2 on page 7).

Of particular interest are returns to education (in income terms) for different occupational groups. In Figure 1 on page 8, simple linear regression lines are plotted for each occupational group. In terms of this figure, managers receive the greatest returns to education, followed by managers and supervisors combined, professionals and workers. In other words, it does seem as if occupational clustering (or group) has significant effects on income independently of all other possible variables. Formal education (and increases therein) thus means different things for different occupational categories. Controlling for all other variables, managers receive a significantly higher income than workers for the same level of education earned.

Formal educational credentials bring greater income returns the higher one moves up the occupational ladder. Lower occupational groups (such as unskilled, semi-skilled and skilled workers) do not benefit from formal education (in income terms) as do professionals and managers-supervisors. In other words, the meritocratic ideology and the associated strategy of educational credentialing benefits upper occupational groups more than they would benefit lower groups. Meritocracy has unequal consequences.

TABLE 2
 EDUCATION AND OCCUPATIONAL GROUPS
 (FREQUENCY DISTRIBUTION)

	YEARS OF EDUCATION				TOTAL
	4-3	4-7	8-11	12+	
WORKERS	7460(96.9%) 33.63%	7846(96.1) 35.37	6419(83.8) 28.93	460(22.1) 2.01	22185 100
MANAGERS & SUPERVISORS	131 (1.7) 21.76	195(2.39) 32.39	242(3.16) 40.19	34 (2.17) 5.65	602 100
PROFESSIONALS	100(1.3) 4.35	128(1.5) 5.56	1001(13.06) 43.5	1072(68.45) 46.58	2301 100
TOTAL	7691(100)	8169(100)	7662(100)	1566(100)	25088

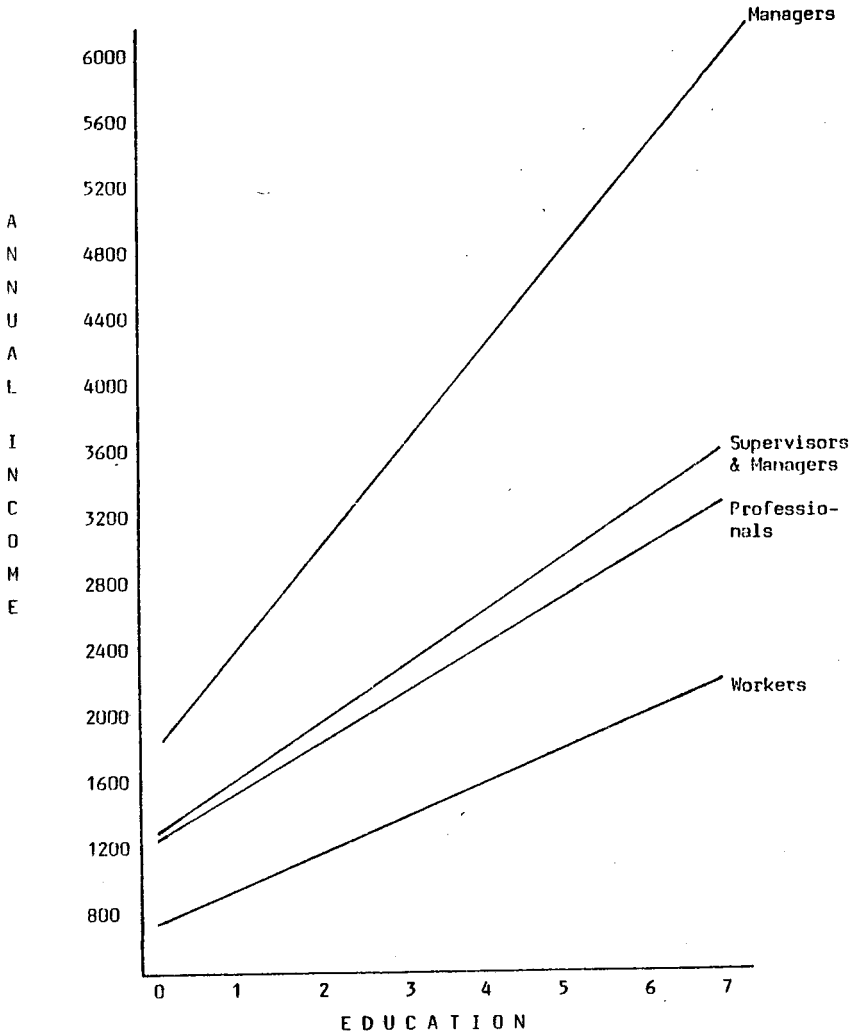


Figure 1. Returns to Education between Occupational Groups. Education credentials are defined as follows: 0=no education, 1=Std.1, 2=Std.3, 3=Std.5, 4=Std.7, 5=Std.9, 6=Std.10, 7=post Matric. Data from Current Population Survey, May 1980.

ASCRPTION, EDUCATION AND INCOME

In the previous section it was shown that education means different things for different categories of occupation. In this section I want to assess what role race and gender, seen as ascriptive phenomena, play in the income determination process. I also want to examine whether education attenuates the effects of race and gender on income. The discussion in this section will be restricted to workers and the managerial hierarchy.

COMPARING MANAGERS AND WORKERS

In Figure 1 on page 8 I showed that managers earned disproportionate returns to education compared to workers. Institutionally, managers are thus encouraged to earn greater educational credentials in order to enter given managerial positions. (Once inserted in those positions, the effect of further education on income is ambiguous). For workers, educational credentials are not that important as a criteria for entry into given occupations. Like managers, further education does not seem to matter much, once inserted in given occupations.

According to the results obtained from the multiple regression model, black managers earned R518.90 less per annum compared to their "coloured"

counterparts. Women managers earned R1207 less per annum than did their male counterparts. This represents 10% difference in earnings by race and a 24% difference by gender. These two variables are more significant than education, occupational status, age, etc. in the income determination process for managers. In other words, the greatest contribution to income inequality within the managerial category is made by gender and then race.

Gender and race had similar effects in the worker category. Male workers earned R696.10 more per annum than female workers. "Coloured" workers earned R518.90 more than black workers. This represents a 23% difference by gender and a 17% difference by race. In absolute terms it is more costly to be female and black in the managerial category than in the worker category. In relative percentage terms, gender has similar effects regardless of occupational category and racial differences are more pronounced in the worker category.

An examination of table 3 on page 11 clearly indicates that gender and race, ascriptive phenomena, play the most crucial role in the income determination process. Achievement phenomena - such as education, occupational status, age (seen as a proxy for experience) etc. - make much less of a difference in income returns for both managers and workers. Meritocratic mechanisms are simply subordinate to ascriptive mechanisms.

TABLE 3

REGRESSION COEFFICIENTS (b's), STANDARDISED COEFFICIENTS (BETA'S), STANDARD ERRORS FOR WORKERS AND MANAGERS. (1)

A. WORKERS

	b	BETA	SE	R ²
OCCUPATIONAL STATUS	R21.17	.3282	.0224	.2570
EDUCATION	R201.9	.3460	.1708	.3262
GENDER ²	R696.1	.2617	.6349	.3978
RACE ³	R350.2	.1310	.6322	.4126
AGE	R11.22	.1143	.0234	.4255
SKILL ⁴	R57.43	.0223	.6850	.4259
B. <u>MANAGERS</u>				
EDUCATION	R320.5	.409	1.396	.1635
GENDER	R1287	.2287	9.532	.2120
OCCSTATUS	R55.46	.169	.5612	.2395
RACE	R518.9	.151	5.770	.2509
AGE	R13.84	.087	.269	.2662
UPMAN ⁵	Not Significant at .10 -----			

1. The Regression Coefficients for all equations are significant at .0001, except for the Upman Equation.
2. Dummy. Male=1, Female=0
3. Dummy. Coloured=1, Black=0
4. Dummy. Skilled and Semi-skilled=1, Unskilled=0
5. Dummy. Upper and middle management=1, Supervisors and lower management=0

INCOME DETERMINATION FOR MANAGERS

If the managerial hierarchy is internally stratified then different patterns of income determination emerge. Two categories of managers were constructed in this model: upper management and management, and lower management and supervisors. Upper management usually has a greater degree of control and discretion over the labour force, the mechanics of production and sometimes over investments. Lower management is usually concerned with regulating the process of production and the industrial behaviour of workers. One would expect earnings to correspond to these "authority" divisions in the managerial hierarchy.

Returns to education for lower management and supervisors are less than half of upper management (R258.78 and R627.18 respectively; see Table 4 on page 13). Black lower management earns R435.53 less per annum than "coloured" lower management. Female lower management earns R1244.94 less per annum than male lower management. The simple regression in Figure 2 on page 14 presents these patterns graphically. While the increments in income are constant for all categories of lower management, all females (as a linear rule) earn systematically less than males and all blacks (again as a linear rule) earn systematically less than "coloureds". The upper management category does not permit such comparisons.

In these terms, blacks cannot overtake the earnings of "coloureds"

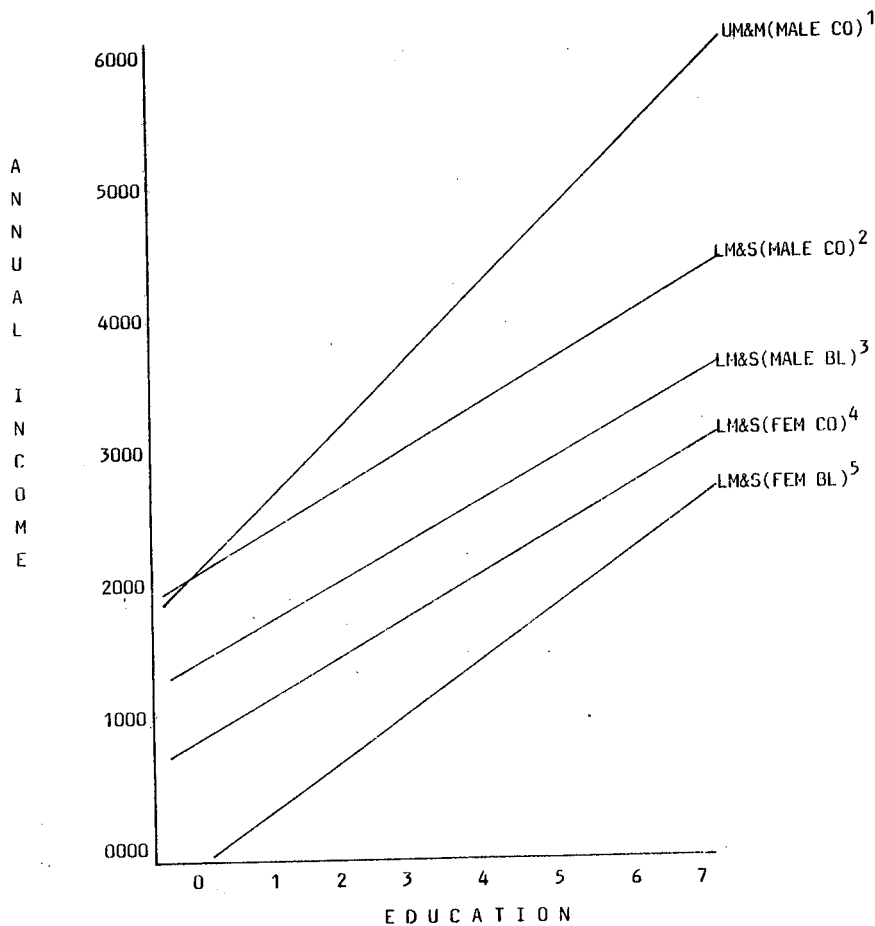
TABLE 4

REGRESSION COEFFICIENTS (b's), STANDARDISED COEFFICIENTS (BETA'S), SE'S FOR SEPARATE CATEGORIES OF WORKERS AND MANAGERS. (1)

	EDUCATION	GENDER	RACE	AGE
1. Unskilled Workers				
b	R150.96	R595.03	R89.0	R7.176
SE	(.299)	(1.054)	(1.133)	(.038)
BETA	.352	.386	.054	.130
2. Semi-& Skilled W's				
b	R258.78	R788.8	R397.14	R12.71
SE	(.410)	(1.82)	(1.696)	(.067)
BETA	.434	.290	.159	.127
3. Supervisors Only				
b	257.71	R1244.9	R435.53	R14.42
SE	(2.272)	(15.959)	(9.344)	(.443)
BETA	.383	.256	.151	.107
4. Upper Management				
b	R627.12	-----	-----	-----
SE	(19.570)			
BETA	.361			

1. The Regression Coefficients of all variables for all equations have a significance of less than .00005.

FIGURE 2



1. UM&M= Upper Management and Management. Male. Coloured.
2. LM&S= Lower Management and Supervisors. Male. Coloured.
3. LM&S= Lower Management and Supervisors. Male. Black.
4. LM&S= Lower Management and Supervisors. Female. Coloured.
5. LM&S= Lower Management and Supervisors. Female. Black.

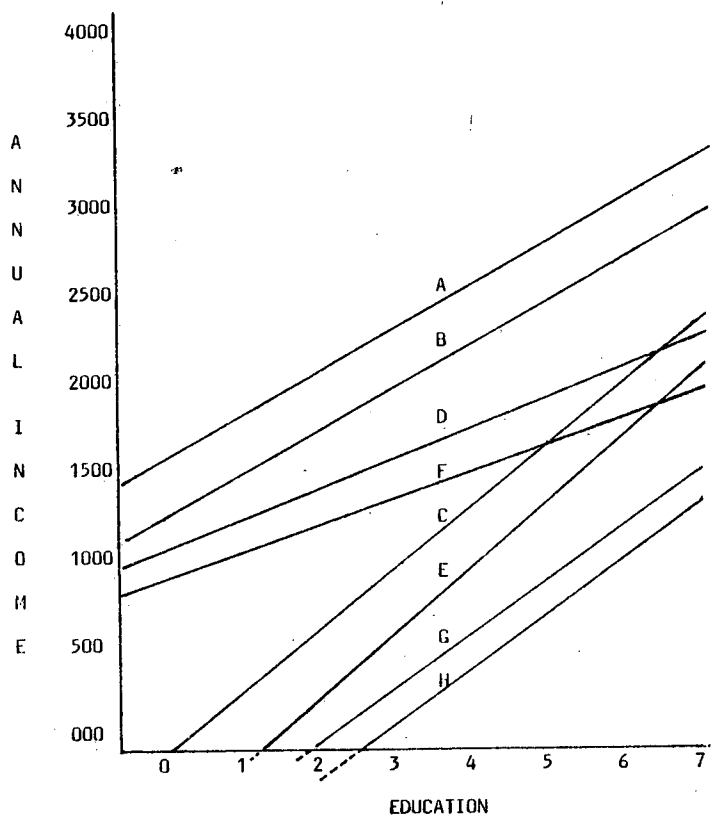
within given categories of management (overtake, that is, as a linear rule: individually it is entirely possible, if probably exceptional) and that (as a rule) females never approach the earnings of males no matter what their educational credentials. Education does not therefore provide a means by which the social handicaps of gender and race can be overcome. Income gaps remain fairly constant in spite of increasing educational credentials.

INCOME DETERMINATION FOR WORKERS

The category 'worker' was stratified into an unskilled section and a semi- and skilled section. Returns to education for unskilled workers are a little more than half that of semi-skilled and skilled workers. (R150.96 and R256.92 respectively. See Table 4 on page 13). Black unskilled workers systematically earned R88.92 less per annum than "coloured" workers. Black semi-skilled and skilled workers earned R397.14 less per annum than their "coloured" counterparts. Female unskilled workers earned R595.03 less per annum than unskilled male workers. Female semi- and skilled workers earned R788.80 less per annum than their male counterparts.

Returns to education for various categories of workers are linearly plotted in Figure 3 on page 16. Despite some differences (such as, for example, the case of "coloured" skilled females overtaking the earnings of skilled black females at about 12 years of education), the ge-

FIGURE 3



- A= Skilled Male. Coloured.
- B= Skilled Male. Black
- C= Skilled Female. Coloured.
- D= Skilled Female. Black.
- E= Unskilled Male. Coloured.
- F= Unskilled Male. Black.
- G= Unskilled Female. Coloured.
- H= Unskilled Female. Black.

neral pattern of income distribution does not differ markedly when one compares one category of worker with another. Race and gender do make a difference in earnings. Female workers (in both unskilled and semi- and skilled positions) earned significantly less than their male counterparts. Black semi-skilled and skilled workers earned systematically less than their "coloured" co-workers. However, unskilled black workers earned a negligible amount less than their "coloured" counterparts. (A difference of R7.50 per month.)

MERITOCRACY AND POVERTY

Meritocratic principles of reward allocation are not reflected in the findings of this study. Race and gender distinctions play a pivotal role in income determination. Increasing education credentials do not reduce the effect of race and gender on wage levels. Contrary to expectations, the higher one moves up the occupational ladder, the greater the effects of race and gender on income levels. The only occupational category where race (and gender to a lesser extent) did not make a significant difference in income is the unskilled worker category. Since the majority of the poor are also unskilled workers, this finding is of important consequence for the meritocratic ideology and the strategy of educational credentialing. More specifically:

- educational credentialing is important as a means of entry into managerial positions, but once inserted into such positions, increasing credentials do not matter very much in the income determination process.

Race and gender are the most vital factors in income discrimination for managers, so that the abolition of structures of racial and gender discrimination would bring significant increases in income for black persons. In other words, the meritocratic ideology and the strategy of educational credentialing would significantly result in much higher wages for black supervisors and managers.

- formal education means much less for workers, especially unskilled workers. Formal education is not required for entry to worker occupational positions and neither does further education, once inserted into such positions, have any significant effects on income. Race and gender significantly affect income distribution within the worker category, but not as much as in the managerial category. For unskilled workers, racial differences have little effect on income and gender differences only a marginal effect.

- to rapidly credentialise the black population, as presumed by a meritocratic ideology, is to qualify only those persons about to enter managerial and supervisory (and professional) positions. The effects, in income terms, for black workers (both skilled and unskilled, but especially unskilled) would be marginal. Furthermore, to simultaneously abandon racial and gender discrimination in wage levels would benefit those in upper occupations more than it will benefit workers. For the majority of the black poor, the unskilled workers, meritocracy becomes an ideology for the already well-paid.

- assuming that South Africa's class structure will remain the same (in the short run) and that income redistribution policies are viable in (very) restricted instances, the economic position of the majority of the poor (the unskilled workers) will not really improve with educational credentialing and/or with the dismantling of racial and gender domination (as desirable as that might otherwise be). The answer seems to lie in overall economic development coupled with much greater pressure on employers to raise wages.

CORRELATION MATRICES

	In- come	Gender	Educa- tion	Age	Race	Skilled and Semi- Skilled	Supervisory and Lower Management	Professional and Semi- Professional	Middle and Upper Management
Income	1,000	,245	,487	,057	,242	,138	,132	,303	,092
Gender		1,000	-,114	,061	,041	,144	,048	-,170	,019
Education			1,000	-,156	,196	,125	,091	,422	,048
Age				1,000	-,071	-,042	,043	,033	,000
Race					1,000	,066	,073	,038	,032
Skilled and Semi- Skilled						1,000	-,136	-,288	-,039
Supervisory and Lower Management							1,000	-,048	-,007
Professional and Semi-Professional								1,000	-,014
Middle and Upper Management									1,000

CORRELATION MATRIX : GENERAL EQUATION. FOR COEFFICIENTS ON PAGE 11

	INCHOUR	GENDER	EDUCATION	AGE	RACE	OCCSTAT	SKILL
INCHOUR	1.000	.197	.507	.054	.239	.507	.223
GENDER		1.000	-.123	.058	.032	-.088	.166
EDUCATION			1.000	-.158	.196	.575	.146
AGE				1.000	-.073	-.036	-.037
RACE					1.000	.128	.086
OCCSTAT						1.000	.438
SKILL							1.000

CORRELATION MATRIX : EQUATION FOR WORKERS ONLY. FOR COEFFICIENTS ON PAGE 13

	INCHOUR	GENDER	AGE	RACE	EDUC	OCCSTAT	UPMAN
INCHOUR	1.000	.133	-.025	.186	.404	.262	.262
GENDER		1.000	.020	-.035	-.204	-.051	-.050
AGE			1.000	-.145	-.202	-.078	-.096
RACE				1.000	.112	.058	.068
EDUC					1.000	.251	.272
OCCSTAT						1.000	.962
UPMAN							1.000

CORRELATION MATRIX. EQUATION FOR MANAGERS AND SUPERVISORS ONLY. FOR COEFFICIENTS ON PAGE 13