

SECOND CARNEGIE INQUIRY INTO POVERTY  
AND DEVELOPMENT IN SOUTHERN AFRICA

Aspects of poverty and education  
in Namibia

by

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# ASPECTS OF POVERTY AND EDUCATION IN NAMIBIA

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## 1. Introduction

### 1.1 Absolute and relative poverty

Absolute poverty is a biological concept, it relates to the minimum needed for survival and work efficiency.

Relative poverty is a function of the inequality of incomes. The relative cost of living is not the cost of buying some fixed set of goods and services, but rather the cost of participation in a social system. Those whose expenditure falls far below the norm are considered poor, whatever their absolute income (Jenks, 1972:5). Conversely, if average income in the reference group of an individual is relatively low, he will suffer less from feelings of relative deprivation, depending also on the level of political activity in the country, expectations and views of what is fair and who has the right to enjoy what (Sen, 1981:16).

This paper is concerned only with absolute poverty, which is a far more serious, indeed existential, problem to the persons afflicted, than relative poverty can be. (The income distribution of Namibia is to be analysed in a forthcoming publication however.)

### 1.2 Measurement unit and poverty variable

Since the family unit allocates goods and services among its members, the family might be considered the appropriate unit of measurement. However, since the data are largely limited to individual incomes, and since the labour market employs individuals and rewards each according to his characteristics, thus determining poverty, the discussion is mostly limited to individual poverty incomes.

Consumption would be a better indicator of poverty than income, because (Fields, 1980:141):

- consumption measures the flow of utility-producing inputs, while money income can only measure the ability to purchase these and poor families often do not spend their income in a nutritiously optimal way (Potgieter; 1978:5);
- some incomes may be unusually low because of stochastic events (illness, drought, fall in world market prices for produce) or because of life-cycle effects (young or old age) and therefore, current consumption (indicating perma-

ment income) would be more reliable;  
- prices may vary substantially across regions, or goods may not be available, so that the distribution of income and consumption differ. (See also Fig. 3 in this context). Reliable information on consumption is costly to obtain and very little information on the distribution of consumption in Namibia has been published however, so that one has to rely on income data.

### 1.3 Poverty measures

1. Having identified poverty incomes by defining an appropriate poverty line (Sen: 1981:21), the numerical weight of poor persons  $Q$  in the total population  $N$  is expressed by the "headcount"  $H$ :

$$H = Q/N.$$

$H$  stresses the qualitative difference between being poor or not-poor. It does not allow for variation in the intensity of poverty and thus remains unchanged even when income is taken from poor persons and given to the non-poor.

2. This deficiency is rectified to some extent by the relative income gap  $I$ , which refers to the shortfall of the average income of poor people  $\mu_Q$  compared to the poverty line  $P$ :

$$I = 1 - (\mu_Q/P).$$

$I$  varies between 0 and 1. It does not give an indication of the prevalence of poverty in the population, but always increases after an income transfer from poor to non-poor.

3. Inequality within the poor population is often assessed by the Gini coefficient among the poor. Although this tradition is followed in this paper, it should be noted that the Gini ( $G$ ) is particularly unsuited to measuring inequality among the poor, since its sensitivity will typically decline as one moves from incomes near the poverty line to very low incomes:

Following Dasgupta, Sen and Starrett (1973: 186), the Gini can be written:

$$G = 1 + \frac{1}{Q} - \left[ \frac{2}{(Q^2 \mu)} \right] (x_1 + 2x_2 + \dots + Qx_Q)$$

for  $x_1 \geq x_2 \geq \dots \geq x_Q$ . Intuitively, this is because the smallest income is included most often, the highest income only once in the area under the Lorenz curve (Sen, 1976: 227). From this it is directly seen that the Gini is not sensitive to the absolute value of incomes involved in a transfer, but only to their relative rank:

$$dG = - \left[ \frac{2}{(Q^2 \mu)} \right] * [j-i] dx < 0$$

for two incomes  $x_i \geq x_j$ ,  $j > i$ .

Since for typical income distributions the lower tail shows increasing frequencies as income increases up to P, a transfer over a given income distance  $x_i - x_j$  will normally cross more ranks near P than at very low levels of income, so that sensitivity is greatest near the poverty line. It can be shown similarly that the Theil index (Theil, 1967) is much more suitable, quite apart from eliminating the tedious calculations unavoidable with the Gini. However, the latter is still used in this paper, for comparability with other studies and because the Gini tends to be more robust than the Theil when calculated from grouped data.

4. The Sen index usefully summarizes these measures, although it must be noted that it may fall (indicating less poverty) when a poor person crosses the poverty line after having received income from an even poorer person (Sen, 1981: 192). Since it can be shown (Kundu and Smith, 1983) that it is impossible to construct an overall index that satisfies various plausible poverty axioms, the Sen index may be as useful as any other in giving a quick summary of what the three measures H, I and G say about poverty in a given population:

$$S = H (I + (1-I)G).$$

## 2. Facts on poverty

### 2.1 Poverty line definitions

Following international usage, absolute poverty is defined as an annual income of less than US\$ 150 (in 1969 prices) (Fields, 1980:144). It may be noted that the World Bank uses poverty lines of \$50 and \$75 (Ahluwalia, 1974). Based on the 1969 R/\$ exchange rate of 1.393 (IMF, Jan 1972:309), the poverty line P1 of \$ 150 is equivalent to R 108 per annum. Since it is well known that official exchange rates do not always result in valid comparisons (Kravis, 1975), one may compare this amount with the food component of the Household Subsistence Level (HSL - see below), which amounted to R 181,80 annually for an adult black man in Windhoek in April 1976, or revalued to 1969, R 105 - R 98 (revalued by the consumer and food price index respectively). One concludes that P1 has a realistic informational content.

It is clear that P1 will suffice only for the very barest survival. Alternatively, one may measure the minimum income necessary to "maintain health and decency in the short run", which includes expenditure for food, clothing, fuel and lighting, cleansing, housing and transport.

The "Institute for Planning Research" of the University of Port Elizabeth has calculated such a measure, the HSL, for Windhoek since 1976 (Potgieter, 1976). The HSL does not provide for educational and medical expenses. However, these seem to be very minor expenditure items even in rural areas, due to public provision of such services.

The HSL for coloured and black persons diverge mainly due to the fact that housing costs for coloureds were almost seven times higher than those for blacks. Since one expects racially determined housing subsidies to fall away progressively, the coloured HSL may be an appropriate benchmark for comparing all incomes. (Rent subsidies in Katutura have been reduced quite rapidly in recent years, so that the rent ratio had fallen to 1:3 by March 1983, in accordance with the policy of selling houses to occupants).

Since this paper is based on individual income earners and not on households, the poverty line will be an appropriate

percentage of the HSL. Therefore P2 is defined as the average of food and clothing costs for a coloured male and female, plus energy, cleaning, rent and transport costs for a coloured household, since these may be assumed to be fairly independent of the number of persons in a household - see Table 1.

Table 1: P2 for one adult April 1976 in Windhoek

	<u>P2</u>	<u>P2*</u>
Food	17,97	15,15
Clothing	7,15	8,13
Energy/Cleaning	17,01	17,01
Rent	31,36	4,5
Transport	<u>3,90</u>	<u>4,35</u>
monthly	<u>77,39</u>	<u>49,14</u>
annually	928,68	589,68

Source: Potgieter (1976), page 34, 38, 48 and 55 as well as own calculations.

For welfare comparisons in the seventies, P2 will be slightly too low for white persons and far too high for black persons. An additional poverty line P2\* is therefore based on the basic living expenses of an adult black man.

It should be noted that for 1976 P2 amounts to 55% and 45% of the standard black and coloured HSL respectively, so that one may say that, roughly speaking, two income earners with income of P2 each could just support these households.

Clearly the number of persons estimated to be poor will react sensitively to changes in the assumptions above. However, the poverty lines above are likely to rather over- than underestimate poverty, since they include a quite substantial "safety margin". It is likely, for example, that nutrition standards appropriate for the USA, on which the HSL seems to be based (Potgieter, 1983: 3), may be up to 20% too high for conditions in Africa (Lipton, 1983: 9).

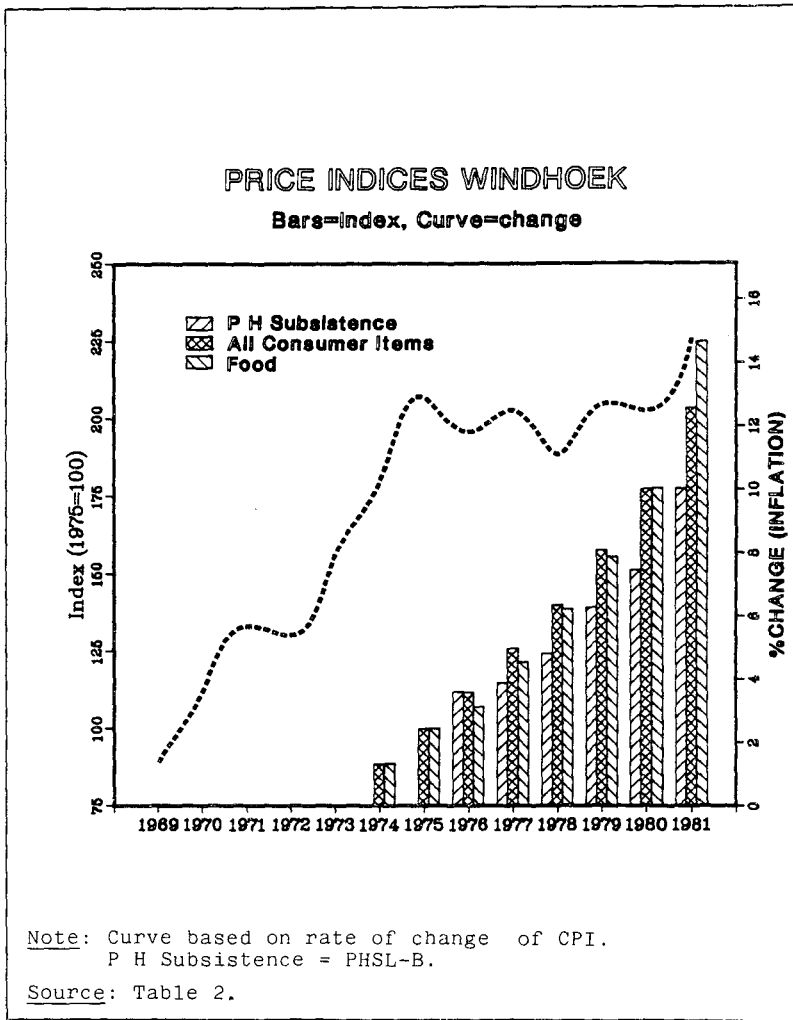


Figure 1: Price indices in Windhoek

For interregional and intertemporal poverty comparisons, the poverty lines should be adjusted by welfare-neutral price indices. Unfortunately, regional or urban/rural indices for Namibia do not exist. Since the PHSL in 1976 was about 20 percent higher in Windhoek than in Cape Town, it is likely that transport and distribution costs raise the level of imported goods even higher in the northern areas. This may be balanced to some extent by the lower cost of other items in rural areas. This paper assumes that the poverty lines for Windhoek are roughly appropriate for other parts of the country as well. If it should be found that rural poverty lines fall significantly below the urban level, this would have a major influence on all the indices calculated.

There is rather more information on intertemporal price differences. Table 2 compares the official consumer and food price indices for Windhoek with the development of the indices for necessities (the PHSL and HSL). Since food will play an important role in the consumption of poor persons, one should expect that the FPI would mirror basic cost development more closely than the CPI. In fact, the indices for necessities exhibit a much smaller increase than both during 1976 to 1982 (see also Figure 1). It is likely that this was due to state subsidies and price control for necessities.

Since double-digit inflation started only in 1974, it is likely that the CPI is quite suitable for calculating inflation-adjusted poverty lines up to 1975.

From 1976 onwards, P1 is adjusted by the PHSL-B index. P2 and, where of interest, P2\* are adjusted up to 1979 by the HSL-C index.

For measures of the 1981 census, a new calculation of P2 is made on the basis of the Planning Institute report for that year, which turns out to be practically identical to the index-adjusted poverty line (R 1 462 versus R 1 477).

Table 2: Various price indices Windhoek 1969 to 1983

	CPI	%*	FPI	%*	PHSL-B	%*	PHSL-C	%*	HSL-B	%*	HSL-C	%*
69	64,6	1,4	57,8									
70	66,9	3,6	60,1	4,0								
71	70,7	5,7	62,2	3,5								
72	74,5	5,4	67,4	8,4								
73	80,4	7,9	78,6	16,6								
74	88,6	10,2	88,8	13,0								
75	100,0	12,9	100,0	12,6								
76	111,8	11,8	107,1	7,1	111,8		111,8		111,8		111,8	
77	125,8	12,5	121,4	13,4	114,7	2,6	114,3	2,2	118,5	6,0	118,9	6,4
78	139,8	11,1	138,5	14,1	124,1	8,2	118,6	3,8	127,9	7,9	123,7	4,0
79	157,6	12,7	155,6	12,4	139,2	12,1	135,7	14,4	144,0	12,7	140,2	13,3
80	177,3	12,5	177,6	14,1	151,1	8,6	152,3	12,2	158,7	10,2	155,7	11,1
81	203,5	14,8	224,8	26,6	177,4	17,4	174,7	14,7	184,5	16,3	177,8	14,2
82	235,0	15,5	263,0	16,9	199,8	12,6	201,0	15,1	206,3	11,8	203,7	14,6
83					223,0	11,6	217,1	8,0	232,0	12,5	216,5	6,3

Sources: Consumer price index CPI and food price index FPI from Dept. of Finance, Windhoek (1982: 58 and 1983: 27), except 1969, from Dept. of Statistics, Pretoria. PHSL and HSL index for black (B) and coloured (C) persons calculated from Potgieter (1976 - 1983), based on 1976 = 111,8.

Note: The absolute amounts in March 1983 were R 264,88 (B) and R 263,73 (C) for the PHSL and R 293,95 (B) and R 331,27 (C) for the HSL.

\* Annual percentage change  $[(I_1 - I_0) / I_0] * 100$ .

## 2.2 Poverty 1939 to 1981

### 2.2.1 Black wages 1939

Rädel (1947:493) presents average native labour incomes for 1939 in the "white" area. Given the CPI-Index for 1939 of 18,66 (Dept. of Statistics, Pretoria), the poverty lines are P1 = R 2,60 and P2 = R 12,92 per month.

It follows from Rädel's data that while the average income of migrant farm labourers and household workers was below P1, all other occupations lie below P2.

The household workers received income in kind of unknown value. If one assumes that this was as large as that for farm workers; this group is lifted above the poverty line. Rädel (1947:465) also quotes minimum and maximum rates for various occupations. From these it transpires that except for road construction (no information given for mine workers), the lowest rates are all below P1, falling in one extreme case to R 0,50 for a female household worker on a farm near Gobabis. The maximum rates found lie between P1 (excepting female farm workers) and P2, with the maximum income being R 13,00 for a business worker in Lüderitzbucht, i.e. just above P2. No information on the frequencies in various occupations is given.

### 2.2.2 The censuses of 1951 and 1970

These censuses requested income information only from Whites and Coloureds. The exclusion of traditional rural populations is understandable, considering that their income was mostly in kind. It is however deplorable that no income data was collected from black urban workers, and the 1981 census has been a major improvement in this respect.

Table 3: 1951 Census low incomes

R Annual income	white		coloured	
	m	f	m	f
under 100	263	398	1 514	994
100 - 199	399	386	1 246	200
200 - 299	442	385	686	33

Source: SWA Population Census, 8 May 1951, p 65 and 92.

Note: Walvis Bay included.

The annual P1(51) was R 60 and P2(51) was R 297. One notes that P1 lies within the first interval, so that a linear interpolation is necessary to determine the proportion of persons below P1. This assumes that individuals are evenly distributed along the interval, although it is likely that the upper half would have a higher density, given the typical form of income distributions. However, without information on average interval incomes, no adjustment is possible, so that the proportion in poverty is likely to be slightly overstated. For instance, it is assumed that there are  $263 * 60 / 100 = 154$  white males who have incomes below P1. Note that the estimation errors in the Gini are likely to be rather large, since they are based on only three intervals (von Kleist, 1981:60-64).

All four measures of poverty under P2 are presented in Table 4, while for P1 only H, the percentage of poor persons in the group, is reported at the end of the table. In all tables, the group "Coloureds" includes Rehobothers. Separate estimates are given for men and women.

The results for all censuses have been collected on page 11 for ease of comparison.

For the 1970 census (Table 5), one should note that the estimates for the proportion of persons earning less than P1 (= R 112) are rather unreliable and likely to be overestimates, since P1 falls into the first income interval. Similarly, the P2 indicators for whites are based on only two intervals and thus unreliable. The other groups' indicators are derived from 5 intervals and thus more dependable.

### 2.2.3 The census of 1981

In the seventies there was a surge of interest in Black wages (e.g. Murray, 1974; Gordon, 1977), but since comprehensive data was not available, such discussions remained very limited. Very limited information is also available from a survey conducted in 1975 for the Constitutional Conference of SWA (O'Callaghan 1977:81), which is interesting mainly for the revelation that income in kind (except for nurses)

Table 4: 1951 Census poverty measures

P2: R 297		H(%)	I(%)	Gini	Sen	H(P1)
Coloured m		79	58	0,321	0,57	21
	f	97	76	0,250	0,99	47
White m		7	44	0,253	0,04	1
	f	31	50	0,299	0,20	6
Coloured m+f		83	63	0,338	0,63	27
White m+f		12	47	0,278	0,07	2

Source: Own calculations from 1951 census.

Table 5: 1970 Census poverty measures

P2: R 556		H(%)	I(%)	Gini	Sen	H(P1)
Nama m		94	62	0,324	0,70	29
	f	99	76	0,216	0,80	49
Coloured m		41	50	0,293	0,26	7
	f	80	60	0,322	0,58	21
White m		6	49	0,219	0,03	1
	f	15	42	0,238	0,08	3
Coloured m+f		51	54	0,311	0,35	11
White m+f		8	48	0,209	0,05	2

Source: Own calculations from 1970 census.

Note: "Coloured" includes Rehobothers.

Table 6: 1981 Census poverty measures (urban population)

P2: R 1 460		H(%)	I(%)	Gini	Sen	H(P1)
Total urban m+f		26	39	0,251	0,14	3
Black m		35	31	0,193	0,16	2
	f	66	53	0,299	0,44	10
Coloured m		6	35	0,189	0,03	0
	f	31	44	0,286	0,19	2
White m		1	21	0,022	0,00	0
	f	1	5	0,006	0,00	0
Coloured m+f		15	42	0,266	0,09	1
White m+f		1	13	0,053	0,00	0

Source: Own calculations from census sample.

Note: N = 1983.

does not significantly change the ratio of white to black income. The first usable official survey of limited scope was undertaken by the Department of Statistics in the "white" area, excluding Windhoek (and for some reason Lüderitzbucht and Oranjemund), thereby limiting any conclusion that could be drawn.

Thus the 1981 census is the first comprehensive source of information on black incomes in Namibia. Due to the time needed for processing, detailed results will not be available even to government for some time to come.

Fortunately, the author was able to persuade the Department of Statistics in Windhoek to make available a sample of the census. The anonymity of respondents was strictly safeguarded by having all cases selected and copied (without names or addresses) by a census official.

Since sampling had to be done by hand, the sampling frame had to be limited to the urban economically active population of Namibia. From this a stratified random 2% sample was selected.

While mines and semi-urban areas are included, persons working on farms are not. Since the farm populations contain respectively 13,8%, 15,0% and 24,5% of the total White, Coloured and Rehobother populations, similar proportions of the economically active population are probably excluded. The comparability of the sample results with those from the 1951 and 1970 censuses is thus limited.

The accuracy of the estimates in Table 6 will tend to be very high, since the measures were computed from the micro-data (after a few wrongly coded cases had been corrected). The possibility of intensive checking of primary data implies that the sample results may even be more reliable than those obtainable from the complete census.

As was noted in 2.1, the poverty line P2 is really too high if one wishes to make welfare comparisons between e.g. black and coloured persons, due to differences in housing costs. Under the adjusted P2\*(81) of R 1 050, one finds that for black males, the percentage poor falls from 35% to 15% and the Sen index falls from 0,16 to 0,08. For black women, H falls from 66% to 52% and S from 0,44 to 0,32.

#### 2.2.4 Owambo, Kavango and Namaland 1974 - 1976

Valuable information on incomes in some traditional rural areas is available from the detailed surveys conducted in 1974 and 1976 by van Wyk (1974,1975) and Nel (1976) in Owambo, Kavango and Namaland.

The surveys utilized a comprehensive concept of income, including consumption of own produce, owner-occupied housing and income in kind. Claasen (1978: 34) notes that imputed values for cattle, goats and sheep could be somewhat too high. This is likely to be more important for estimates under P1 than under P2, since low incomes stem mainly from agricultural produce, while high incomes are paid mainly in cash. For Owambo and Kavango, P1(74) = R 148 and P2(74) = R 736. Estimating cash spending as a fraction of income (details in von Kleist, 1981: 82), one finds that in Kavango, cash income amounts to 34% at P1 but 55% at P2 levels of income. The figures for Owambo are 38% and 61% respectively. The incomes for Namaland were not similarly criticised.

The 1976 poverty lines for Namaland are P1: R 187 and P2: R 929.

Table 7: Poverty measures for Owambo, Kavango and Namaland

<u>Indicator</u>	<u>Owambo</u>	<u>Kavango</u>	<u>Namaland</u>
H(P2)	80,2	84,7	42,0
I	61,7	60,9	46,2
Gini	0,338	0,344	0,274
Sen	0,599	0,630	0,256
H(P1)	20,4	21,1	5,9

Source: Own calculations from tables in van Wyk, Nel.

A comparison of Table 5 and 7 would suggest a remarkably rapid improvement in Nama incomes within 6 years, since the proportion falling under P2 shrinks from 99-94% to 42%. A likely explanation is that incomes reported for the census were mainly money incomes, ignoring most income in kind. Moreover, the Nama incomes in Table 7 refer to household incomes. Even though the average Nama household had only 1,2 income earners (Nel, 1976: 15), this, together with the fact that income in kind comprised 50% of total income in Table 7, may explain more than half the difference: if P2 is multiplied by 2,4, H rises to 70%.

This observation supports the supposition that income reported for the census will not be very reliable if much of that income is non-monetary. It therefore seems reasonable to supplement the census information on urban poverty with the survey information on rural poverty.

Another point worth making is that the Owambo and Kavango surveys include an imputed monthly rent of R 2 in incomes, which is quite similar to the housing costs in P2\*, while imputed rent in the Nama survey is much more similar to housing costs in P2. From a welfare (not income) point of view, P2\* would therefore be the appropriate poverty line for Owambo and Kavango. From  $P2^*(74) = R 467$  it follows that the percentage of poor persons was 85% for Owambo, 86% for Kavango in the traditional rural sector (i.e. agriculture, hunting and fishing) compared with 94% and 95% under P2, which is relevant for income comparisons.

## 2.3 Conclusions

### 2.3.1 Intertemporal development

The fragmentary data allows no strong conclusions. However, one notes that:

- while in 1939 practically all black incomes in the "white" area (roughly equivalent with the formal sector) were below P2, this has fallen to 35% for male and 66% for female black urban workers in 1981.

- From 1951 to 1970, the proportion of coloured persons earning less than P1 or P2 fell quite dramatically. Whites also saw some reduction in (already low) poverty.
- in 1981 urban poverty was practically non-existent for white and relatively low for coloured persons. This implies further substantial falls in overall poverty even if there was considerably more poverty in farm incomes than in urban incomes.

### 2.3.2 Intranational poverty profile

A poverty profile for Namibia as a whole requires some strong assumptions:

- It is assumed that the ratio of earners to population is the same in Owambo and Kavango as when the income surveys were conducted and that poverty did not increase relatively from 1974 to 1981. This may be realistic: On the one hand, population growth causes sharper competition for the limited subsistence resources available. But on the other hand, considerable and increasing amounts of government funds had been flowing to the traditional areas, producing a force lowering poverty. Further, if the drought caused impoverishment, this could be regarded as a temporary influence. This assumption is relevant only for the rural areas, since the urban areas such as e.g. Oshakati or Ondangwa are included in the census sample. Consequently, the H percentages have been calculated for the farming and hunting income distribution only and are thus higher than those in Table.7, which refer to the total population in those areas.
- It is assumed that poverty in traditional areas for which there is no information is distributed as in Owambo.
- It is assumed that non-traditional rural (i.e. white farm) incomes are distributed as those for farm owners and farm workers in urban districts.

Under these assumptions and given additional data from the Department of Statistics, Windhoek, on total population and economically active persons in the categories in Table 8, one may arrive at estimates on the overall incidence of poverty in Namibia 1981.

In conclusion, it is found that about 3% of urban earners and up to 33% of rural earners are very poor. Of the 66% of all persons who earn less than P2, an overwhelming majority makes a living from subsistence agriculture. This pattern is wellknown from other developing countries.

There have been a number of negative developments in the economy since 1981 and the social costs of the war in the North have increased (Abrahams, 1983: 3; Weaver, 1983: 22). These developments suggest that the intertemporal decline in poverty identified in 2.3.1 may have been halted and even reversed recently. Similar inferences can be drawn for the intranational incidence of poverty.

Table 8: 1981 estimate of poverty for income earners in rural and urban Namibia

<u>Sector</u>	<u>(% of earners N)</u>		<u>H(P1)</u>	<u>N v poor</u>	<u>H(P2)</u>	<u>N poor</u>	
1. <u>Rural</u>							
1.1 Owambo	39,6	110 173	31,5	34 705	94,0	103	563
1.2 Kavango	6,2	17 293	32,9	5 689	95,2	16	463
1.3 Namaland	0,6	1 575	5,9	93	42,0		662
1.4 Oth. trad.	4,7	13 164	31,5	4 147	94,0	12	374
1.5 Non-trad.	12,5	34 708	15,1	5 241	66,0	22	907
2. <u>Urban</u>	36,5	101 556	2,5	2 510	26,3	26	733
<u>Total Namibia</u>	<u>100,0</u>	<u>278 469</u>	<u>18,8</u>	<u>52 385</u>	<u>65,6</u>	<u>182</u>	<u>702</u>

Source: Own calculations from census sample, table 6 and 7 and data supplied by the Department of Statistics.

Note: The estimate for income earners in rural Owambo and Kavango is higher than would follow from the 1981 census.

### 3. Causes of poverty

#### 3.1 Introduction

Poverty is caused by systematic (macro) and personal (micro) variables. Macro variables are general conditions affecting the whole population and subject to fairly direct policy control. Important examples are state transfer rules (left side of Figure 2), rules on land ownership and on the economic system of the country (in Figure 2: relative prices transforming factor endowments into basic income).

Micro variables are personally rooted and show only long-term reaction to government action, if at all. Such variables are attitudes, motivation and ability, interacting with human capital increasing processes as formal education to produce quantitatively and qualitatively differing factor endowments, which are the fundamental determinants of personal success and welfare.

An analysis of the effect of education on poverty is complicated by the fact that a macrovariable (subsidized education) interacts with various microvariables and that the importance of education can only be weighed within the context of a model incorporating as many important variables as possible.

The power of subsidized education as an anti-poverty strategy flows from its impact on the most fundamental stage of the income determination process - insofar as it succeeds in increasing productivity.

#### 3.2 Macro variables

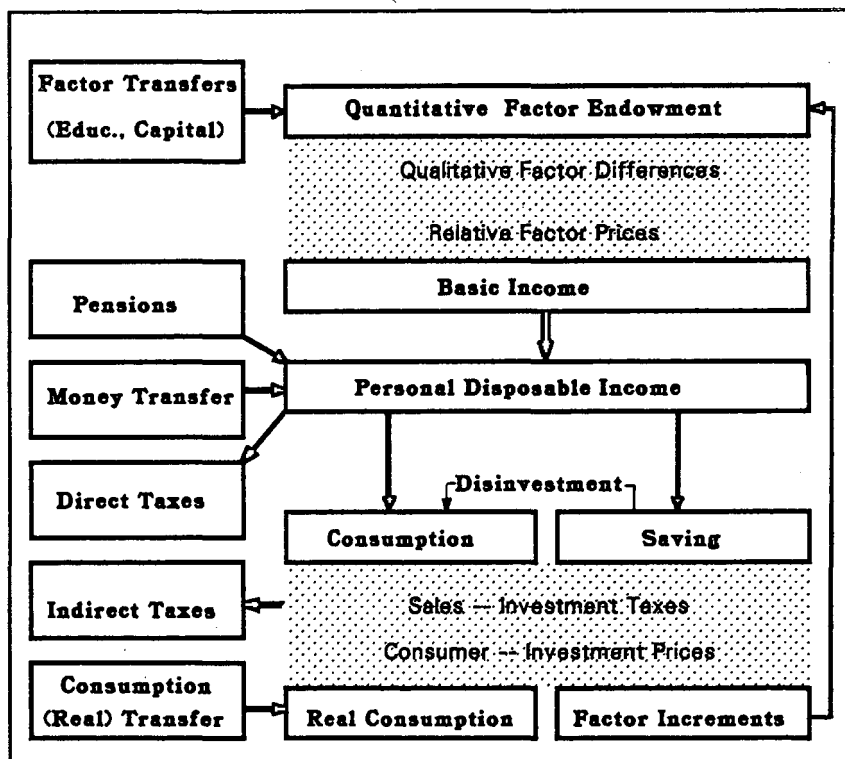
##### 3.2.1 Transfer inequalities

Since a large proportion of Namibian GDP comes from the exploitation of natural resources the state was able to make large transfers, real (health services) and monetary (pensions), as well as factor transfers (free education, cheap land bank loans, infrastructure). One may question whether the state income from these sources was as large as it might have been. But certainly the unequal incidence of transfers contributed to poverty.

# Income Determination Process

State

Private Household



Note: The diagram was developed from that in Werner (1979:47).

Figure 2: A model of the income determination process

Following the recommendations of the van Eeden Commission (1980), the present government is attempting to provide the same exceptionally high transfers to all population groups. Although this must be reducing the incidence of poverty temporarily, the limits of this policy have clearly been reached, with the state building up foreign debt at a breathtaking pace. High money or consumption transfers are also not particularly effective or even feasible over the long term in reducing poverty, although their desirability as a minimum social "safety net" in a competitive economy is unquestioned.

### 3.2.2 Land ownership

The traditional, communal grazing system is a major source of poverty, causing overstocking and resultant overgrazing, diseases and soil erosion. (The general difficulty of marketing agricultural produce from traditional areas is being overcome by road building and creation of marketing channels - elements of factor transfer.)

The introduction of state farms or collectivization of agriculture would not stimulate agricultural production, as is evident from Tanzania's experience (Mshonga, 1979: 53-59). However, a system allocating land to individual families, coupled with agricultural training and extension services, strict implementation of stock limits and erosion control and the option of later ownership would probably succeed in transforming a number of subsistence farmers into viable entrepreneurs, while others could transfer to irrigation farming (Claasen, 1978 and Page, 1980: 102).

If freehold tenure is considered, it should be subject to controls over land abuse and speculation, since small farmers could otherwise be thrown back into poverty (Mshonga, 1979: 39,41).

In the White farming area, safeguarding and expanding employment for the poor will rule out confiscatory policies. A land reform as suggested by Thomas (1978: 101-105), based on reasonable compensation to farmers who wish to leave and encouragement of efficient farmers who wish to stay would avoid a collapse in modern sector agriculture.

### 3.3.2 Personal characteristics

There is clear evidence from chapter 2 that the major burden of poverty in Namibia has fallen on the black and the female sectors of the population, a result familiar from other countries. Much controversy has been generated by the question of how well educational success measures productive ability, attitudes and motivation and whether male whites on average tend to have an advantage in these productive qualities and how much of this is due to environment, culture and inheritance. This paper takes the view that monocausal explanations of personal poverty are clearly inadequate, but that an exact quantification of the importance of various variables is not possible at the present state of knowledge.

Instead, the following section estimates a model of differing probabilities of poverty, controlling for the influence of education and thereby puts into perspective the magnitude of effects an expansion of the present educational system could have. The model also places upper bounds on the importance of racial and sexual discrimination as poverty determinants within the given framework of the Namibian economy.

### 3.4 A model of poverty probabilities

It is assumed that the probability of not being poor follows the logistic model:

$$P(\text{not poor}) = \exp(U(X)) / [1 + \exp(U(X))]$$

where  $U(X) = \sum b_i X_i$ , the  $X_i$  being relevant macro- and micro-variables.

The probability of being poor is restricted here to the probability of having an income below P2 and the choice of explanatory variables is limited by the information collected in the census. For example, factor endowments of capital or land are unfortunately not known, although they would contribute significantly to explaining poverty.

The probabilistic model is also chosen because it stresses the importance of using a full population sample in the analysis of poverty. If e.g. only poor people were included in a more conventional earnings analysis, the few unusual persons

Table 10: BMDP logistic poverty regression

TERM	COEFFICIENT	STANDARD ERROR	COEFF/S.E.
SEX	0.601	0.954E-01	6.30
MARRIED	0.334	0.724E-01	4.62
WHITE	1.47	0.285	5.16
COLO	0.580	0.114	5.07
ED6T07	0.515	0.927E-01	5.56
ED8T09	1.10	0.162	6.82
EDHIGH	1.52	0.312	4.86
DOMSERV	-1.70	0.271	-6.28
FARMWORK	-0.910	0.221	-4.11
WINDHOEK	0.233	0.745E-01	3.13
CONSTANT	2.45	0.527	4.65

Table 11: Statistics to enter or remove terms from model

TERM	APPROX. F TO ENTER			APPROX. F TO REMOVE			P-VALUE
	D.F.	D.F.	D.F.	D.F.	D.F.	D.F.	
SEX				34.06	1	1812	0.0000
MARRIED				18.32	1	1812	0.0000
WHITE				22.91	1	1812	0.0000
COLO				22.10	1	1812	0.0000
ED1T03	1.13	1	1812				0.2880
ED4T05	1.45	1	1812				0.2282
ED6T07				26.55	1	1812	0.0000
ED8T09				39.91	1	1812	0.0000
EDHIGH				20.30	1	1812	0.0000
DOMSERV				33.92	1	1812	0.0000
FARMWORK				14.52	1	1812	0.0001
WINDHOEK				8.41	1	1812	0.0038
CONSTANT				15 IN			

Table 12: Summary of stepwise results

STEP NO	TERM ENTERED	DF	TERM REMOVED	LOG	IMPROVEMENT		GOODNESS OF FIT	
				LIKELIHOOD	CHI-SQUARE	P-VALUE	CHI-SQUARE	P-VALUE
0				-1061.370			1034.665	0.000
1	DOMSERV	1		-903.824	315.092	0.000	719.561	0.000
2	WHITE	1		-745.905	315.839	0.000	403.740	0.000
3	COLO	1		-707.740	76.330	0.000	327.411	0.000
4	FARMWORK	1		-693.926	27.628	0.000	299.785	0.000
5	ED8T09	1		-680.213	27.425	0.000	272.360	0.000
6	SEX	1		-666.924	26.578	0.000	245.785	0.000
7	EDHIGH	1		-649.651	34.547	0.000	211.238	0.002
8	ED6T07	1		-631.943	35.476	0.000	175.824	0.100
9	MARRIED	1		-621.121	21.643	0.000	154.178	0.435
10	WINDHOEK	1		-616.140	9.962	0.002	144.216	0.640

Table 12a: Percentage probability of NOT being poor

Education	Windhoek				not Whk	
	male		female		Female	
	B	C	B	C	B	C
0 - 5	59	82	30	58	22	47
6 - 7	80	93	55	80	44	71
8 - 9	93	98	80	93	71	89
10 +	97	99	90	97	85	95

Note: unmarried, not domestic or farm worker.

whom higher education has not brought prosperity would seriously bias the estimation of the influence of education on the incomes of the poor (see Berk, 1983).

The selection of variables is guided by the results of chapter 2. Sex and race dummies are clearly necessary. Marriage is often an indicator of a stable personality and commitment to work. Education is split into 5 levels, according to completion of educational stages. The occupations of farm labourer and domestic servant showed a high proportion of poverty in the past. Finally, a job in the capital may pay better than one in smaller towns.

Table 11 shows all the variables available. While all other variables (with the possible exception of "Windhoek") prove to be very highly significant, educational achievement up to Std. 5 is unimportant for the probability of earning an income above P2. This is a very serious finding, given that the vast majority of black pupils never reaches Std. 6.

The coefficients of the model (Table 10) are fairly straightforward to interpret: For a married white man with Std. 8, assuming ignorance about the other variables,  $U(X) = 2,45 + 0,334 + (1,47 - 0,58) + 0,601 + (1,1 - 0,515 - 1,52) = 3,34$ ;

$$P(\text{not poor}) = \exp(3,34) / 1 + \exp(3,34) = 0,966.$$

So, the probability of his not being poor is estimated to be 97%. For a single black woman, assuming she is neither a domestic or farm worker and that she lives outside Windhoek, the probability of not being poor is 22%, if she has an education of Std. 5 or less. If she has Std. 8 or 9, this rises to 71%.

The summary of stepwise results (Table 12) shows that while the last three terms do improve prediction, they do not fit the logistic model too well.

Finally, one may ask how well the model predicts poverty. This depends on the cutpoint selected. For example, if one decides to classify everyone with P less than 50% as poor, one will correctly classify 91% of non-poor persons. However, only 62% of poor persons would be correctly classified, i. e. 38% of poor persons would be classified wrongly as "not poor". This is because there is a fairly large group of un-

married black men with Std. 5 or less in the sample, of whom exactly half is poor.

The best cutpoint is therefore  $P = 62\%$ , since then 83% of poor and 78% of non-poor persons are classified correctly. The trade-off between increasing success in identification of poor persons and overall accuracy is illustrated below.

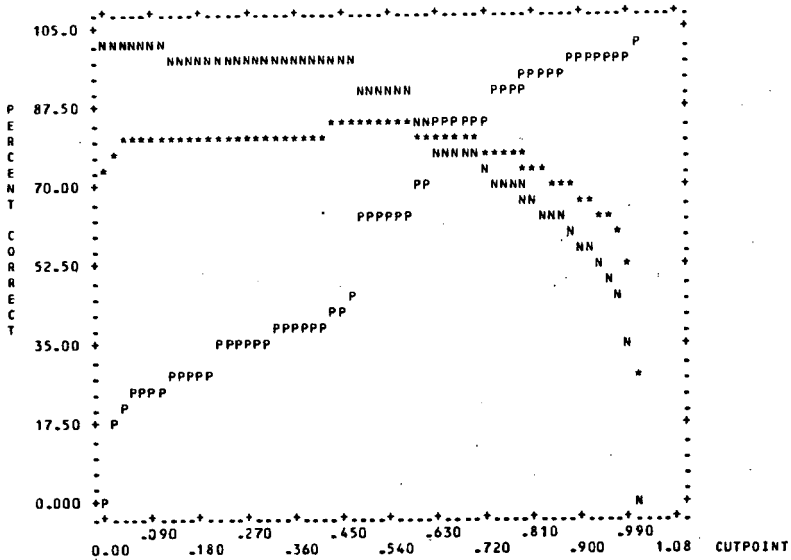


Figure 3: Percentage of correct classification as function of the cutpoint

Note: Plot for non-poor(N), poor(P) and total(\*).

Higher education would seem to be a powerful force against poverty, although:

- educational success depends partly on drive, ambition and intelligence. Insofar as these are responsible for high incomes, the effect of pure education will be overstated;
- education performs social selection for top posts and an expansion of higher education could simply increase the "credentials" needed.

Consequently, the costs and benefits of different stages of education must be carefully weighed. Efforts should be made to ensure a highly productive effect of education, both in the lower and higher stages.

#### 4. Developing education

##### 4.1 Efficiency of education

In a genuinely competitive market economy, incomes would be determined by factor endowments. Insofar as education is not only the most important factor, but also often a prerequisite for the efficient utilisation of other factors, a substantial increase (and reform) of education for the poor will be crucial. It would, however, be a naive fallacy to assume that a simple increase in educational qualifications will automatically translate into increased productivity. The importance of form and content of education must be emphasized. Moreover, education is a necessary rather than sufficient condition for significant productivity gains, since the macro conditions must also be modified.

Namibia spends as much or more on education as other countries proportionately (von Kleist, 1983: 96), but the private rates of return are much higher than average, indicating a scarcity of educated persons. The explanation is that the system is very inefficient in producing primary and secondary graduates: Of 100 children (of all groups) who enter school, only 15 enter Std 6 and only 3 enter Std 10 (von Kleist, 1983: 78).

From the poverty perspective, it is disturbing to find that such a large proportion of pupils leaves school before Std 6, apparently having learnt nothing of productive (i.e. income-enhancing) value.

We divide the reasons for the limited success of Black education into personal and systematic causes:

- Since parents' socio-economic status has a powerful influence on success at school, Black children are at a disadvantage. (Research on the lack of school preparedness has started in the Department of National Education and experimental one-year preparatory programmes have resulted in substantial improvements in pupil achievements in Owambo.)
- If funds spent are an indicator of school quality, one might expect a) teacher-pupil ratios, b) the proportion of teachers with graduate qualifications and c) expenditure per pupil to be indicators of quality. From Table 13 it is quite clear that there is a gradient in school inputs. A simple increase of funds spent is, of course, no guarantee for increased achievements, and it is also doubtful whether

Table 13: Schooling quality indices for the black (1), coloured (2) and white (3) education systems

Teacher-pupil ratios 1981

Group	1	2	3	Total
Pupils	210 731	20 420	18 303	249 454
Teachers	6 057	821	1 261	8 139
Ratio	24.8	24.9	14.5	30.7

Source: Pupils: van Niekerk (82), teachers: Depts of Education

Qualification of teachers (qualified) 1981

	1		2		3	
	N	%	N	%	N	%
Std. 6 or 8 + training	3 328	87	399	55	2	0
Std. 10 + 1 - 3 years	371	10	278	38	598	47
Std. 10 + 4 years	117	3	53	7	661	53

Source: Departments of Education

PUPIL RATIOS AND EXPENDITURE PER PUPIL IN VARIOUS SYSTEMS 1980

Authority	Sec/Pr	Total/head	Salaries/head	StdX pupil	StdX/Second.X
Basters	11	24.6	248	98	6.4
Whites	21	50.0	795	1 031	15.9
Caprivi	31	18.1	216	45	2.3
Damara	41	23.4	388	53	3.9
Herero	51	..	..	..	..
Kavango	61	1.9	193	137	0.0
Coloured	71	26.9	578	353	4.5
Nama	81	12.9	149	53	3.9
Owambo	91	6.4	103	71	2.0
Twanas	101	..	..	..	..
NatEduc	111	9.3	292	151	4.3

\* estimates

Source: van Niekerk (1982), Departments of Education, Reports of the Auditor-General and own calculations.

the extremely high cost of White education is necessary for a national school system.

#### 4.2 Content of education

It is often argued that the "academic" content of curricula encourages unrealistic aspirations in the majority of pupils and that the vocational content of schooling should be strengthened. However, it is argued (von Kleist, 1983: 92) that vocational training is more efficiently provided during employment, although it may be supplemented with part-time theoretical training in schooling institutions.

Similarly, it is argued that education promotes the tendency to leave farming and that curricula should be "ruralized". Although it will be useful to teach children the principles of good land use and animal husbandry at school, a "rural" curriculum alone will not keep people in the country, this will only happen if conditions and incomes in agriculture improve (von Kleist, 1983: 93).

On the other hand, the curriculum should place great emphasis on generally productive skills: literacy, numeracy and work ethic and at higher levels, responsibility and judgement (von Kleist, 1983: 23-24). It also seems important that English is introduced at the earliest stage, wherever possible, for reasons of productivity (von Kleist, 1983: 70-77).

#### 4.3 Quantity versus quality

Educational policy faces the conflict between expanding schooling as quickly as possible, even if most pupils attend only for a few years, or concentrating on fewer children and ensuring that they reach at least Std 6.

To some extent, both avenues will probably be followed. Rural schools could aim for a Std 2 credential, which would certify very basic literacy and numeracy, enabling farmers to participate in rural development programmes successfully. The gifted children would move to small urban centres, where achievement of Std 6 would be the minimum aim. In time, more schools could be upgraded until all children could attempt to reach at least Std 6.

The funding for this continual expansion would have to be provided by a growing economy, in which more highly educated persons could achieve higher incomes under improved macro conditions, including the reduction of racial and sexual discrimination. Even if education succeeds in fostering productive skills appropriate for the Namibia economy, the eradication of poverty will probably prove to be a slow, difficult process.

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