

NOMADIC FERTILITY AS COMPARED WITH THAT OF RAIN CULTIVATORS IN THE SUDAN

By

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The experience of the western world tells us that with improvement in income and living conditions, fertility declines. This experience is reflected in such theories as that of demographic transition. There is little evidence that developing African countries will follow the same pattern⁽¹⁾.

In the present circumstances of Africa, there is evidence that with better economic and living conditions, fertility tends to rise rather than drop⁽²⁾. This is apparent from the study of fertility differentials in some African countries⁽³⁾

(1) On this point Rupert B. Vance states: «The reduction of fertility, it may be said, requires a shift in social values from these directed toward the survival of the group to those concerned with the welfare and development of the individual. This shift has been achieved only recently in the more industrialized countries of the West. It is a painful process and it is not native to peasant mentality. Differential fertility may be taken as the emergence of the downward trend led by the near elite and the middle classes. In homogeneous peasant populations of the East, it may be that no comparable groups will appear to start the downward trend of fertility. With fixed religious and agrarian cultures, with no broad middle class and no tradition that the elite can or should be initiated, the problem of closure of the demographic gap in the Orient has found no comparable answer in the Western model». Rupert B. Vance, «The demographic Gap: Dilemma of Modernization Programs», in *Approaches to Problems of High Fertility in Agrarian Societies*. Milbank Memorial Fund, New York, pp. 16—17.

(2) An example of how fertility rises as a result of improvements in health conditions and standards of living, and in the absence of change in people's attitudes to family size, is given by the experience of Indians in Mauritius. The crude birth rate increased from 33.9, which was the annual average for the year 1933—37, to 48.3, which was the annual average for the years 1949—53. See H. V. M. Herchnroder, «The High Fertility in the Population of Mauritius in Recent Years», in *Proceeding of the Population Conference*, Rome, Meeting No. 8, Vol. I, p. 851.

(3) See Ansley J. Coale, «Estimates of fertility and mortality in Tropical Africa», in *Population of Tropical Africa*, London, 1968, pp. 179—186. It must, however, be remembered that part of the difference between these provincial birth rates may be due to differences in the quality of reporting. What is immediately relevant to our purpose is that fertility differentials within many countries do exist, and the question arises as to how far these differences are the result of deliberate birth control, and how far the result of factors which are not due to deliberate action by the population concerned. If the latter case is established, then with the removal of these factors—other things remaining equal—fertility will rise in the low regions to match the higher fertility levels prevailing in other parts of the country.

Studying the causes behind infertility in tropical Africa, A. Romaniuk refers to what he calls the «normal fertility» that he expects to find in the continent ⁽⁴⁾ This normal or standard fertility (a birth rate of about 60 per thousand and childlessness of about 5 per cent for women aged 45 years and over on account of congenital sterility) would be expected as a result of :

- (a) Early age of marriage.
- (b) Absence of birth control.
- (c) Low expectation of life at birth.
- (d) No prolonged abstinence during lactation.

While birth rates of 60 per thousand have been attained in some African countries, elsewhere very low levels and high proportions of sterile women were commonly encountered.

Romaniuk rules out polygamy, disease (other than venereal diseases), malnutrition, abortion and contraceptive practices as important factors contributing significantly to low fertility, and he emphasizes the effect of venereal diseases. While I agree that venereal diseases play an important role in areas with low fertility, I believe that venereal diseases, together with the factors listed above which are associated with low fertility, are themselves the result of other circumstances, namely of people's environmental conditions and generally of their mode of life. It is the latter factor which seems to explain differences in fertility and which is confirmed by the Sudan experience.

A series of demographic surveys was taken in the country in the period 1961-1968. Their purpose was to study fertility differentials in the country. The rural population (which is well over 90 per cent of the country's total) can be roughly divided with regard to mode of life as follows :

- (a) Nomads.
- (b) Rain cultivators (i. e. cultivators who depend on the rains for cultivation purposes).
- (c) Cultivators who depend on modern agricultural schemes which are the result of heavy capital investment (e. g. the Gezira Cotton producing scheme).

(4) A. Romaniuk, «Infertility in Tropical Africa», in the *Population of Tropical Africa*, Longmans, London, 1968, pp. 214—224.

The above divisions roughly represent the three stages which the Sudan population follows on the road to economic and social development.

The first stage is that in which dependence on animals (cattle or camels) for sustenance is the prevailing type of economy. The second is one in which the population depends partly on animals and partly on shifting rain cultivation. In the third, the population depends mainly on irrigation schemes with a continuous and stable supply of water, and consequently higher and more stable living conditions. In another publication, the fertility of the nomadic population (stage I) and that of settled populations in the Gezira Scheme (stage III), were studied and the fertility of the latter was found to be almost twice that of the former⁽⁵⁾. Further, cohort analysis has shown that as nomadic populations become settled agriculturalists, their fertility tends to rise to much higher levels⁽⁶⁾.

In this paper the nomads will be compared with another section of the population, normally rain cultivators (stage II), who represent a sizeable part of the population of the six northern provinces of the Sudan.

In the case of the Gezira Scheme, there are two variables at work : the first is settlement and the second is improvement in the standard of living. In the case of rain cultivators, only one variable is operative, and that is settlement. The purpose of this paper is to compare the fertility of that section of the population with the fertility of the nomads.

The survey among the nomads was taken in December 1961, while the survey among the rain cultivators was carried out in December 1967. For the purpose of the latter survey, the Dar Bederiya tribe in central Kordofan province (in the west of the Sudan) was selected. The data were fed to the computer and only some of the results have come out. These are compared with published data on the nomads.

(5) See the Author's «Fertility Differentials in the Sudan (with reference to the nomadic and settled populations)». *Population studies*, Vol. XXII, No. 1, March 1968, pp. 147—164.

(6) The nomads, in common with other Moslem communities, aspire to large families, yet their economic and social conditions, and indeed their whole environment, prevent them from having the number of children they desire. On the other hand, with settlement, the change of habitat and mode of life would provide the conditions by which Islam could gain greater influence.

SEX RATIO

In most censuses and surveys in Africa, data on age are subject to substantial errors. Although great pains were taken in the survey to arrive at the correct age, it cannot be claimed that the efforts were completely successful. Evidence of mis-statement of age is apparent from Table 1, which shows the age composition and the sex ratio⁽⁷⁾

TABLE 1
Age Group, Sex Ratio for The Rain Cultivators

Age group	Males	Females	Total	Sex ratio
Under 1 year	84	88	172	95
1— 4	301	329	630	91
5— 9	394	401	795	98
10—14	267	254	521	105
15—19	158	222	380	71
20—24	147	201	348	73
25—29	149	235	384	63
30—34	140	144	284	97
35—39	143	137	280	104
40—44	131	125	256	105
45—49	102	81	183	126
50—54	85	81	166	106
55—59	59	50	109	118
60 and over	147	119	266	124
Total	2307	2467	4774	94

(7) The mistakes in the data may derive from various factors. One of these factors is the way the questions were asked. No attempt was made to get the actual age, in view of the fact that numbers do not mean much to a great part of the communities we are dealing with. The year of birth was asked instead, and this was related to a dateable event. The type of mistake that characterizes the data would be the result of one or more of the following :

- Faulty calendar of local events.
- Wrong allocation of an event to the time of birth of an individual by the interviewer.
- Cases of deliberate falsifications of age by the respondent, either upward or downward.

Bearing in mind the limitations of the data, it is still possible to derive some conclusions :

- (a) Of the 4,774 persons covered by the sample, 2,118 (about 44 per cent) are under 15 years. This finding places the rain cultivators between the nomads, with 40 per cent, and the Gezira population, with over 50 per cent ⁽⁸⁾
- (b) The persistence of low sex ratios between ages 15 and 30 point to out-migration of males of these ages, to the more developed area of the country ⁽⁹⁾

FERTILITY LEVELS

The following table compares the age specific fertility rates for the nomads with those for the rain cultivators.

TABLE 2

Age Specific Fertility Rates of Women Aged 15—49
of All Marital Conditions

Age group	Nomads	Rain cultivators
15—19	9.8	18.2
20—24	145.6	194.0
25—29	142.9	323.4
30—34	180.0	263.9
35—39	166.7	153.3
40—44	39.7	48.0
45—49	10.9	24.7
Total	695.6	1025.5
Total fertility rate	3.478	5.128

(8) «Fertility Differentials in the Sudan», op. cit., p. 149, Table 1.

(9) See the Author's «Economic Development and Internal Migration in the Sudan», *Sudan Notes and Records*, Vol. . The study shows that Kordofan province was a net loser of migrants to the more economically developed parts.

Number of Women and Births

Age group	Nomads		Rain cultivators	
	Women	Births	Women	Births
15—19	205	2	222	4
20—24	206	30	201	39
25—29	196	28	235	76
30—34	200	36	144	38
35—39	132	22	137	21
40—44	126	5	125	6
45—49	92	1	81	2
Total	1157	124	1145	186

The nomads have a lower fertility at almost every age, when compared with the rain cultivators. The causes behind the low fertility of this population, which is predominantly Moslem, and which does not practise any form of birth control, are discussed elsewhere⁽¹⁰⁾. These causes were roughly divided into nuptial factors and medical and physiological factors. Among the nomadic women were found : a high age at marriage, high proportions of single women, high marriage instability and a high proportion of women married to polygamous husbands. Only the nuptial factors will be discussed here when comparing the nomads with the rain cultivators.

In the remainder of this paper women aged 15 years and over are divided into categories and the average number of live births will be used for comparison purposes.

The average number of live births per women (including all marital conditions) is given below.

(10) «Patterns and Causes of Fertility Differentials in the Sudan», a paper accepted for publication by *Population Studies*.

TABLE 3
Average Number of Live Births Per Woman
(Women of All Marital Conditions)

Age group	Number of women	Nomads	Number of women	Rain cultivators
		Average number of live births		Average number of live births
15—19	205	0.13	222	0.49
20—29	402	1.59	436	2.37
30—39	332	3.30	281	4.24
40—49	218	4.51	206	5.36
50 and over	193	4.64	250	4.11

There is little doubt that both the age-specific fertility rates and the average numbers of live births per woman are subject to a certain amount of error, judging from the disparity between the total fertility rate and the average size of completed family. Among the nomads the total fertility rate is 3.5 as compared with 4.6 for women aged 50 years and over. In the case of the rain cultivators the opposite is true. While the total fertility rate is 5.1 the average number of live births for women aged 50 years and over is 4.1.

In the following table the age specific birth rates are cumulated and compared with the average number of live births by age group of the women.

TABLE 4
Cumulated Age Specific Fertility rates and Average
Number of Live Births Per Woman

Age group	Nomads		Rain cultivators	
	Cumulated age specific fertility rates	Average number of live births	Cumulated age specific fertility rates	Average number of live births
15—19	0.05	0.13	0.09	0.49
20—29	1.49	1.59	2.68	2.37
30—39	3.23	3.30	4.96	4.24
40—49	3.48	4.51	5.13	5.36

There is evidence from both the cumulated age specific fertility rates and the average number of live births per woman, that the rain cultivators have a higher fertility than that of the nomads.

Two factors will now be studied. The first is that of marriage instability and the second is childlessness. The following table gives the proportions of women with unbroken marriages (i. e. women currently married and married once only).

TABLE 5
Proportion of Women with Unbroken Marriages
of The Total Ever-Married Women

Age group	Total ever married	Proportion with unbroken marriages	
		Rain cultivators	Rain cultivators
	Nomads	Nomads	Rain cultivators
15—19	108	74	88.3
20—29	393	369	82.5
30—39	255	270	68.6
40—49	149	204	53.9

A part from group 15—19, the rain cultivators seem to have higher marriage instability as compared with the nomadic women. Confining the analysis, therefore, to the fertility of women of unbroken marriages, the average number of live births per woman in this category is given below :

TABLE 6
Average Number of Live Births Per Woman
(Women Aged 15—49 with Unbroken Marriages)

Age group	Nomads	Rain cultivators
15—19	0.45	0.82
20—29	1.84	2.92
30—39	3.78	5.02
40—49	5.26	6.31

By age 40—49 women of unbroken marriages amongst the rain cultivators produce about one child more than the nomadic women.

INCIDENCE OF CHILDLESSNESS

The Following Table Gives the Proportion of Childless Women

TABLE 7

Percentage Childless Amongst Ever-Married Women
Aged 20—49

Age group	Nomads	Rain cultivators
20—29	24.9	11.4
30—39	15.5	8.5
40—49	11.5	17.2
Total	18.1	11.9
Number of women aged 20—49	893	843

While about 18 per cent of the nomadic ever-married women were childless, the comparable percentage for the rain cultivators is about 12 per cent.

There is a tendency however for women of unbroken marriages to have a lower incidence of childlessness when compared with women of broken marriages, as shown below.

TABLE 8

Proportion Childless Among women of Unbroken
Marriages and Women of Broken Marriages Aged 20—49

Age group	Unbroken marriages		Broken marriages	
	Nomads	Rain culti- vators	Nomads	Rain culti- vators
20—29	22.9	10.4	33.9	15.5
30—39	10.9	7.6	25.7	10.1
40—49	6.0	4.8	18.0	18.6
Total women aged 20—49	630	559	263	284

A part from the fact that proportion of childless women is higher amongst women of broken marriages than amongst women of unbroken marriages, what is more relevant to our study is that the incidence of childlessness is higher amongst the nomads than the rain cultivators. This is true for women of both categories.

Confining the analysis to fertile women only, the average number of live births per women who has had at least one live birth and whose marriage has not been interrupted by divorce or widowhood, is given below :

TABLE 9
Average Number of Live Births Per Fertile Woman
of Unbroken Marriage Aged 20—49

Age group	Nomads	Rain cultivators
20—29	2.38	3.25
30—39	4.24	5.43
40—49	5.59	6.83

Even with fertile women (i. e., women who had at least one live birth), the nomads have a lower average number of live births than the rain cultivators. This in fact sums up the thesis presented in this paper. As mentioned earlier, the causes for the low nomadic fertility have been discussed elsewhere. What is relevant to this paper is that any improvements in the modes of life of populations with low fertility are immediately reflected in a rise in the fertility rate. If nomads settle on the land and resort to rain cultivation, their fertility rises. When such rain cultivators are provided with modern agricultural schemes, the improvements in incomes, sanitation, etc., are again reflected in higher fertility levels which Romaniuk as mentioned at the beginning of this paper-calls «normal fertility» that he expects to find in Africa, namely «a crude birth rate of about 60 per thousand and childlessness of about 5 per cent for women aged 45 years and over on account of congenital fertility». The implications of this on the overall rate of population growth which is already high in many African countries—should be borne in mind, in view of the complexity of the economic problems to which a rapid population growth gives rise.

RÉSUMÉ

L'expérience de «l'Occident» nous apprend que la fécondité diminue au fur et à mesure que le niveau de vie s'élève. Dans les conditions actuelles en Afrique, il y a des indications que ceci ne serait pas toujours le cas.

Pendant la période 1961—1968, on a procédé à un nombre d'enquêtes démographiques destinées à étudier les variations en fécondité à l'intérieur du Soudan. Dans l'enquête dont il est question ici, on a comparé la fécondité de la population nomade à celle de cette partie de la population qui dépend pour son existence sur des cultures saisonnières réglées par la tombée de la pluie. Cette enquête révèle que malgré la plus grande instabilité maritale des cultivateurs comparée à celle des nomades, la fécondité est plus élevée chez ceux-là. Cette différence s'expliquerait par la moindre permanence qui caractérise parmi d'autres facteurs les populations nomades.