

---

# INCOME POVERTY LINE AND WAGE STRUCTURE IN THE SUDAN: AN EMPIRICAL INVESTIGATION, 2006

---

NAGAT ELMULTHUM

---

## INTRODUCTION

---

The most common approach to defining an absolute poverty line is to estimate the cost of a bundle of goods deemed to assure that basic consumption needs are met. For developing countries, the most important component of a poverty line is the expenditure on the amount of food necessary to attain some recommended food energy intake. This is then augmented by a modest allowance for non-food items (Ravallion 1992). Annand and Nur (1988) presented an elaborate methodology for the estimation of the absolute poverty line. In particular they computed the average calorie needed by a person per day according to age and sex groups, then obtained the overall average calorie requirements per person by using groupings in a reference census. They constructed alternative food baskets composed of items common in poor peoples' diets so that each basket would yield the minimum required calories per person, costed the resulting baskets at the relevant prices and averaged them to obtain the minimum cash requirements for food consumption. According to Annand and Nur (1988) the computed cash requirements for food consumption constitute one third of the total cash requirements for food and non-food consumption. This necessitates the use of a conversion factor equal to 3 for the computation of the income poverty line necessary for food and non-food consumption. Out of the twelve consumption baskets constructed by Annand and Nur (1988), Ali (1994) derived three consumption alternatives based on equal calorie contents. According to him, those consumption alternatives represent different consumption patterns for poor people. Using weights of the three consumption alternatives, estimates of the consumption items of a standard consumption pattern were calculated. By applying prices to the consumption items of the standard consumption pattern, the minimum cash requirements for food consumption was obtained. Multiplying this income poverty line by a conversion factor of 1.33, as reported in Ali (1994), the poverty line for food and non-food consumption was calculated. Elmulthum (2002) employed the viability idea embodied in the Jorgenson model (1961) of the development of a backward economy which consists of only one sector, namely, agriculture. Using GDP, an estimate of a subsistence level of income necessary for food and non-food consumption at the level of per capita gross domestic product necessary for population to grow at a maximum (and not the maximum) rate was obtained. The estimated subsistence level of income was treated as synonymous with the income poverty line. The main objective of this paper is to estimate an income poverty line for the Sudan for the year 2006. In particular, the income poverty line will be estimated following Annand and Nur (1988) on the basis of the consumption of the recommended calories for poor people. The estimated poverty line obtained will be compared to the wage structure in the public sector in the Sudan.

## METHODOLOGY

---

The methodology adopted here is based on Annand and Nur (1988) who constructed twelve consumption baskets from items common in poor peoples' diets in such a way that each basket would yield the recommended calories. Out of the twelve consumption baskets three baskets were selected to represent different consumption habits in Sudan. The average cost of these baskets was used as the minimum cash requirement for food consumption. Multiplying the minimum cash requirement for food consumption by a conversion factor of 1.33 (Ali 1994) we obtained the per capita minimum cash requirement for food and non-food consumption, which was further multiplied by the average family size in Sudan to obtain the household income poverty line for Sudan for the year 2006. This poverty line was compared with the wage structures in the public sector in Sudan. The average minimum recommended calories per person per day for Sudan for the year 2006 was estimated using the recommended daily allowance of calories per person based on age-sex calorie requirements (Annand and Nur 1988), coupled with the age sex distribution of population for the year 2006. In particular, the average calorie requirement for each age-sex group is multiplied by the corresponding population size to obtain the calorie requirement for the particular age group. In summation, across the whole population we obtained the overall calorie requirement; dividing by the population size we then obtained the average recommended per capita calorie requirement for the Sudan for the year 2006. Here, we may note that disaggregated data on population size based on age sex groups was obtained by applying growth rates to the population census data for the year 1993.

## RESULTS AND DISCUSSION

---

In this section we will report our results as to the estimated poverty line for the Sudan. In particular we will report the result as to the estimation of the recommended level of calorie consumption for the Sudanese people, based on the recommended level of energy for each age group. The results related to the monetary value of the poverty line will be reported. The value of the poverty line is then compared with the levels of income in the country.

### AVERAGE RECOMMENDED LEVEL OF CALORIES:

---

Table (1) shows the recommended level of calories, the population size, the total calories for each sex-age group, and the average recommended calories for Sudan. It is clear from the table that the estimated average calories per person per day for the year 2006 is equal to 2311 Kcal. Compared with the food baskets selected from Annand and Nur (1988) for the purpose of estimating the income poverty line for Sudan the average calories obtained from the three selected baskets were respectively 99%, 95% and 95% of the average recommended level of calories for urban, pastoralists, and ruler consumers.

TABLE 1. RECOMMENDED CALORIES ACCORDING TO AGE-SEX DISTRIBUTION OF POPULATION (2006)

Sex-age group	Recommended calories	Population size	Total recommended calories
0-9 children	1550	10032089	15549737950
10-19 Males	2857	4400039	12570911423
10-19 females	2383	4118437	9814235371
20+ males	3000	8518476	25555428000
20+ females	2200	8131273	17888800600
<b>total</b>		<b>35200314</b>	<b>81379113344</b>
<b>average</b>		<b>2311</b>	

SOURCE: OWN CALCULATIONS BASED ON ELMULTHUM 2005.

The average per capita cost of the three selected food baskets was equal to SD 5621.4 per month. Following Ali (1994), multiplying this cost of the basic food items by a conversion factor of 1.33, we found that the per capita income poverty line for the year 2006 was equal to SD 7476.46. For the purpose of calculating the income poverty line for a household we multiplied the per capita income poverty line for food and non-food consumption by 7 (average family size). Hence, the household income poverty line for the Sudan for the year 2006 is equal to SD 52335 which equivalent to \$US 227.5.

#### POVERTY LINE AND WAGE STRUCTURE

Relating the estimated poverty line to the wage structure in the public sector in the Sudan, we found that only the two highest wages in the country, namely the wage for the first and second groups were above the poverty line. The wage of the third group exactly coincided with the poverty line. The wage rates for the remaining fourteen groups of the wage structure were below the poverty line. The lowest two wage levels, namely the wage rate for general labour and holders of secondary school certificate are 24% and 27% of the estimated income poverty line. The percentage of the wage rate of each wage group decreases as we move along the wage scale (see Table (2)). This result indicated that the majority of the Sudanese people working in the public sector were below the poverty line. Furthermore, the absence of coping mechanisms to make up the difference would lead to corruption.

TABLE 2. WAGE FOR DIFFERENT WAGE GROUPS IN THE PUBLIC SECTOR AND AS A PERCENTAGE OF THE POVERTY LINE

Wage group	Wage in SD	Wage in \$	Percentage of wage out poverty line
1	66169	287	126
2	58824	255	111
3	52294	227	100
4	46243	201	88
5	41110	178	78
6	36547	159	70
7	32282	140	61
8	27595	120	53
9	24349	106	47
10	23413	102	45
11	22512	98	43
12	20013	87	38
13	19242	84	37
14	17107	74	32
15	16449	72	31
16	14061	61	27
17	12500	54	24
<b>average</b>	<b>30477</b>	<b>136</b>	<b>59</b>

SOURCE: MINISTRY OF WORK AND GENERAL SERVICE 2006, SUDAN.

We recommend that the calculated poverty line should be used as the basis for the minimum wage level in Sudan, since lower levels of income will lead to consumption levels below those required to provide the recommended level of calories. Furthermore, efforts to improve the quality of life for Sudanese people by creating employment opportunities through the establishment of development projects are also recommended.

## REFERENCES

---

Ali, A.A.G. (1994). 'Structural adjustment programs and poverty in the Sudan' (in Arabic). Cairo: Arab Research Center.

Annand, V. and Nur, E. (1988). 'The absolute poverty line in the Sudan; Estimates and analysis', *The Asian Economic Review* 30(3):357-383.

Elmulthum, N.A. (2005). 'A National Nutritional Food Security Index for the Sudan'. (Presented at the TWOWS Third General Assembly and International Conference: Women's Impact on Science and Technology in the New Millennium. Bangalore, India, 21-25 November 2005).

Elmulthum, N.A. (2002). 'A Methodology for Estimating the Income Poverty Line with Application to Sudan East Africa'. *Social Science Research Review* Vol. XV111, No. 2.

Jorgenson, D.W. (1961). The development of a dual economy. *The Economic Journal* 71: 309-334.

Ravallion, M. (1992). 'Poverty Comparisons: A guide to concepts and methods', LSMS, Working paper No. 88, World Bank.