AVAILABLE DEMOGRAPHIC DATA AND THE LEVEL AND PATTERNS OF POPULATION CONCENTRATION AND MIGRATION IN ETHIOPIA: AN ASSESSMENT.

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To acquire a detailed knowledge of the characteristics and movements of people is a wish that seldom comes true, even for development planners. And yet, it is this knowledge of people's demographic and socio-economic characteristics, as well as their motivations, thought processes and habits, that ensures the success of whatever development strategy is being devised to increase the welfare and satisfaction of the basic needs of an ever larger number of people.

The scarcity of primary data and consequent analysis is particulary true of the volume and patterns of the migratory movements of the Ethiopian population. This paper will attempt

(1) to survey the available data on internal migration in Ethiopia; and

(2) to assess the intensity, direction and characteristics of this phenomenon

A. THE DATA

Data on temporary absence of residents from sections of the *entire country* were collected for the first time by the Central Statistical Office through a National Sample Survey. This survey was multi-purpose in character and was designed to collect information on population distribution and composition as well as fertility, mortality and temporary current migration. Topics such as land tenure and agricultural production were also covered.

The National Sample Survey (NSS) was conducted in two rounds. The First Round (1964-1967) covered only twelve of the fourteen provinces, (Bale and Eritrea were not surveyed.) Estimates for the rural population were made from samples whose sizes ranged from 0.5% to 1% of the total households in the surveyed areas. Large sampling errors are therefore to be expected for the estimates and rates inferred on that basis. Estimates for the urban areas were offered for 248 towns and published in the *Survey of Major Towns in Ethiopia* (Central Statistical Office, *Survey of Major Towns in Ethiopia* 1968). Migration was explicitly treated in a later publication of the C.S.O., *Urbanization in Ethiopia* (C.S.O., *Urbanization in Ethiopia*, 1972; pp. 7-14, 22-28; and Tables IV, V, VI). In this analysis, however, estimates were offered for 195 towns only, [1] and five of these were based on the 1956 Ministry of the Interior assessments, fourteen on the 1962 assessments by the Ministry of the Interior, and four on estimates provided by the Department of Geography at the then Haile Sellassie I University. Furthermore, the population for twelve towns was estimated on the basis of the NSS Second Round.

A preliminary analysis of the results of the First Round of the NSS concerning both the rural and urban population of Ethiopia is offered in *Population of Ethiopia* (C.S.O., *Population of Ethiopia*, 1971; pp. 1-31).

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The Second Round of the National Sample Survey was conducted between 1969 and 1971. It covered 82.2% of the rural population, with the exclusion of Eritrea and nomadic areas of other provinces. The results for the rural population were published in *Results of the NSS, Second Round, Vol. II, part I, part II. Tables of Demographic Data by Province* (C.S.O., *Tables of Demographic Data*, 1974). An analysis of these data, on the rural population, inclusive of data on temporary current migration, was presented in *Results of the NSS, Second Round, Vol. I, The Demography of Ethiopia* (C.S.O., *The Demography of Ethiopia*, 1974).

The Second Round of the NSS covered ninety-one towns only, or 37% of the urban population of Ethiopia. The results of the Second Round Survey were published in *Results of Urban Survey, Second Round, Part I, II, III. Tables of Demographic Data for Ninety-one Towns* (C.S.O., *Tables of Demographic Data for Ninety-one Towns*, 1975).

Data on migration, population distribution and composition, as well as fertility and mortality for the urban population, are discussed systematically in *Analysis of Demographic Data of Urban Areas covered during Urban Survey, Second Round*, 1969-1971 (C.S.O., *Analysis of Demographic Data*, 1977).[2]

The reliability of the demographic data collected by the two surveys of the Central Statistical Office is clearly qualified in the reports and analysis published by the C.S.O. In both cases, sampling error estimates are given for each region. While in the First Round Survey, the relative standard error had a range oscillating between 2.9% and 58.1% (C.S.O. 1971, pp. 33-34), the accuracy of the Second Round Survey improved considerably and its range was kept between 3.4% and 10.2% (C.S.O., 1974, p. 130),

Sampling error, however, appears to be only one of the factors operative in diminishing the accuracy of the C.S.O. data. For instance, the population of Wellega, fully sampled in 1966 during the First Round Survey, was reported to have increased by over four hundred thousand people at the time of the Second Round Survey about three years later (from 1,136,000 in Jan. 1967 to 1, 557, 200 in Jan, 1970)[3] The difference in Standard Error between the two surveys (8.1% in 1966, and 3.5% in 1969) combined with the rate of natural increase and normal migration can hardly account for the phenomenal increase in population (C.S.O. 1971, p. 34; and C.S.O., 1974, p. 130). Errors of a systematic nature must be present, although it is difficult to identify them with any precision. The different sampling design used in the two surveys may be one source of bias. Another possible source of error may be the "roughly estimated population size" used to determine the probability proportional to size in the sub-divisions within each selected *mikitil* (division in a woreda) (C.S.O., 1971, p. 32), which may have been grossly underestimated or overestimated.

Data for the entire country (with the exclusion of Eritrea, Tigrai and nomadic areas) were also collected by the Ministry of Agriculture and Settlement through a Small-scale Agricultural Census taken in 1976/77. *Rural Population and Employment in Agriculture* (Ministry of Agriculture and Settlement, *Rural Population and Employment in Agriculture*, 1978)[4] reports the answers of 4,744 households from 200 Farmers' Associations selected from the total number of Farmers' Associations in each stratum defined by region and cropping pattern (Ministry of Agriculture, op. cit., p. 2). The coverage is limited to the rural population and questions on migration were not asked.

More recent estimates of the urban population were produced by the Urban Dwellers' Associations in all urban centres.[5] The figures refer to the total population of 244 towns, without any breakdown by age, sex or socio-economic and migration characteristics. The C.S.O. used these estimates to replace the 1956 Ministry of the Interior population figures for 30 towns. Valuable information on Ethiopian towns was also collected and analysed by Cooper and Horvath.

Neither the data made available by the Ministry of Agriculture and Settlement, nor those provided by the Urban Dwellers' Associations' estimates and the projections for 1977 by the C.S.O.,[6] have any direct relevance for a study on internal migration. They are of great interest, however, for an analysis of population concentration in Ethiopia.

The assessments provided by the Governatorato Generale for most urban areas (Ministero degli Affari Esteri, *Guida dell'Africa orientale*, 1938) during the Italian occupation, as well as those made available by the Ministry of the Interior[7] for 1956, 1958, 1962 and 1966 for the entire country, are similarly useful as indications of population concentration during the period.

Individual sections of the country have received greater attention through the years by researchers and administrators, who have produced valuable information for the study of local migratory patterns. Such is the case with Eritrea, Addis Ababa and Asmara.

Demographic data on Eritrea go back to 1899 (Ministero degli Affari Esteri, *Relazione sulla Colonia Eritrea del R. Commissario Civile Straordinario Onorevole Ferdinando Martini*, 1900; Rossini, Carlo Conti, *Rivista Geografica Italiana*, 1902), and were up-dated at regular intervals under Italian auspices (Castellano, Vittorio, *Atti della IX Riunione*, 1947; United Nations, *Report of the United Nations Commission for Eritrea*, 1950). An administrative survey was also conducted in 1948 by the British authorities during their temporary occupation of Eritrea (Pankhurst, R., *The Ethiopian Observer*, 1971).

Addis Ababa was the object of successive studies of uneven quality by C.K. Wang (Wang, C.K., *Ethiopian Observer*, 1957), the Central Statistical Office's NSS First Round (C.S.O., *Population of Addis Ababa*, 1972), the C.S.O.'s *Manpower and Housing Survey* (C.S.O. *Addis Ababa Manpower and Housing Sample Survey*, 1977) and John J. Palen (Palen, John J., *Internal Migration. The New World and the Third World*, 1976). A detailed demographic sample survey was also carried out, during August-September 1978, jointly by the C.S.O. and the Ministry of Housing and Urban Development and the Addis Ababa Municipality.

Similarly, a relatively large body of demographic data are available for Asmara. Repeatedly surveyed while Eritrea was an Italian colony (see Martini, Rossini, Castellano, above), Asmara also had its population estimated by the British Military Administration (Pankhurst, R. *The Ethiopian Observer*, 1971). Finally, in 1968, the C.S.O. took a census of the population and housing characteristics of Asmara (C.S.O., *Population and Housing Characteristics of Asmara*, 1974).

B. ANALYSIS OF POPULATION CONCENTRATION AND INTERNAL MIGRATION.

The scope and quality of the data on internal migration in Ethiopia dictate to a large extent the type of analysis to which they can be subjected.

Accordingly, a sociological discussion is clearly impossible. Such a perspective would entail not only the assessment of the volume, patterns, opportunities, "pushes" and "pulls" interactive in the process, socio-psychological adaptive costs of the migrants, their selectivity and integration in the environment of their destination, but also the complex, multi-staged system of motivations and sets of values through which their decisions about moving were reached. A sociological analysis of internal migration demands a series of longitudinal studies and a set of in-depth interviews which are simply not extant.

The available data are more amenable to conventional demographic interpretation in which some aspects of the following population movements can be identified and assessed:

— rural to rural migration
— rural to urban migration
— urban to rural migration
— urban to rural migration
— urban to urban migrat ion.

The most common techniques of classical demographic analysis, however, cannot be applied to the study of internal migration in Ethiopia, because of the absence of a vital-events registration system, population registers, successive censuses, and because of the lack of a consistent battery of questions on migration in the surveys discussed above. This discussion of internal migration will consequently be limited to an analysis of population concentration and selected aspects of migration.

B. 1. Indicators of Population Concentration

Migratory movements have the obvious, immediate effect of redistributing the population across the geographic and administrative boundaries of a country and of contributing to the decrease or, alternatively, the growth of the population concentration in its various regions. The resulting different degrees of population concentration - urbanization is but one its many aspects - cannot be ascribed to differential fertility and mortality rates alone. Although conventional indicators fall short of factorizing the specific weight contributed by migration to the degree of population concentration, they adequately describe the shared impact of fertility, mortality and migration.

(a) Total population Concentration

Two indices were used to assess the degree of concentration for Ethiopia as a whole: the Gini Concentration Ratio and the Duncan Index of Concentration. The Lorenz Curve of Concentration was introduced to offer a graphic representation of both the Gini Concentration Ratio and the Duncan Index of Concentration.

The index proposed by Gini describes the spread of population among the various areal sub-units of the country. It compares the cumulative proportion of the total population in the sub-units (provinces/regions) with the cumulative proportions of the area of the sub-units.

The lower bound of Gini's Concetration ratio is given by

$$\left(\sum_{i=1}^{k=n} X_i \, Y_{i+1}\right) - \left(\sum_{i=1}^{k=n} X_{i+1} \, Y_i\right)$$

Where X_i and Y_i are cumulative population percentage distribution and cumulative area percentage distribution, respectively, and n is the number of the administrative units considered.

The calculated lower bound of the Gini Ratio for 1962 is 0.316; for 1970 it is 0.322, and for 1977 it is 0.436.[8] (See Table 1).

The estimate itself of the Gini Ratio was obtained by using Ayenew Ejigou's formula (Ayenew Ejigou, 1976, p. 7):

$$G-G_L = (\tfrac{1}{3}) \left[D_1^2 (Y_1 - m_1) + \sum_{i=2}^{k} (m_i - Y_{i-1}) D_i^2 \right]$$

Where G is the Gini estimate, G_L the computed lower bound of the Gini Ratio, D_i the uncumulated proportion of area of each region to the total area of the country, m_i the slopes of the lines at the various points (X_i, Y_i), γ_1 the slope between m_1 and m_2 (Ayenew 1976, p. 3), and $\gamma_{i+1} = 2m_{i+1} - \gamma_i$ where $i = 1,2,\ldots K\text{-}2$.

The resulting estimates of the Gini Ratio for 1962, 1970 and 1977 are 0.320, 0.326 and 0.440 respectively. (See Tables I, II, III, IV.) The lack of significant increase between the 1962 and 1970 ratios can be imputed to the serious over-estimation of the 1962 population assesment.[9]

The Duncan Index of Concentration (C.I.) is algebraically equivalent to the Index of Dissimilarity [10] It is computed as the sum of the positive differences between the uncumulated proportion of population and the uncumulated proportions of land area of sub-units, respectively represented by X_i and Y_i in the formula

$$\Delta = \tfrac{1}{2} \sum_{i=1}^{k=n} | X_i - Y_i |$$

The results reported in Table I are consistent with the corresponding Gini Ratios and subject to similar comments.

The results in applying the Gini Concentration Ratio and the Duncan Concentration Index to the 1970 and 1977 data on Ethiopia's population are graphically shown in Figure A. In this graph, the Lorenz Curve of Concentration summarises more forcefully the indications of concentration already offered separately by those measures. The cumulative per cent distribution of population in fourteen regions (X axis) is plotted against the cumulative per cent distribution of the areas of the same regions (Y axis). Should there be an even distribution of population in Ethiopia Lorenz Curve would be the same as the diagonal.

(b) Urban Concentration

Clearly, the population of Ethiopia is not evenly distributed, although the departure from this expectation is not overly impressive, and the degree of population concentration appears rather low. Even more relevant to the issue of internal migration, however, is the question whether the population concentration mainly takes the form of urbanization or whether it is accounted for by smaller human settlements. The Durand-Palaez Index and the differential rates of growth of urban and rural areas, strongly suggest the former hypothesis as more likely.

The successive differential levels and paces of urbanization in Ethiopia are secured through the John Durand-Palaez index

$$\frac{U_t - U_o}{U_o} \times 100$$

where U_o and U_t are percentages of urban population at time 0 (1970 in this case)[13] and time t (1977) [14] respectively. It gives the per cent change in per cent urban population between 1970 and 1977. This index shows (see Table I) that the percentage of the urban population of Ethiopia increased by a staggering 53.4%. A further breakdown of this index for urban areas with 5,000 or more people, as compared to all other urban localities, gives a value of 63.6 and of 1.9 respectively.

The rate of growth of all urbanized areas during the 1970-1977 period follows a similar pattern. It is around 6.3% per annum. [15]

The tendency toward a high degree of concentration and a faster growth rate is especially true of the bigger cities: Addis Ababa grew during that period by 4.8% per annum, Asmara by 7.1%, Dire Dawa by 4.3%, Nazreth by 8.8%, Gondar by 9.1%, Jimma by 6.7%, and Harrar by 3.9%.

The growth of rural areas registered a much more modest rate of 2.0% per annum. [16]

(c) Primacy Index of Concentration

The key role played by the bigger cities in the process of population concentration and, implicitly, migration, has already been documented by the foregoing indicators. It is even more clearly spelled out by applying G.K. Zipf's formula or rank-size rule. (Implications of "primate cities" and their correlations with economic development and industrialization do not enter this discussion. The rank-size rule is used here simply as a useful index of demographic concentration.)

This rule postulates the existence of a non-linear relation between the size of the primate city or cities and the number of cities. More precisely, the size of the first city is expected to be equal to the size of any other city in the country multiplied by its rank. Accordingly, by the formula [17] $P_r = K/r$, where P is the population of city "r" in the rank, K the size of the first city and r the rank of the city with population P_r the theoretical size and distribution of cities can be reconstructed, and deviations of the expected from the observed, calculated.

The rank-size rule was applied to 14 designated urban localities in Ethiopia in 1970 and in 1977. Of the fourteen only two - Addis Ababa and Asmara - were cities of 100,000 or more persons. Non-city localities - less than 100,000 persons-were included in order to be able to study the symmetry in the pattern of urban population concentration. The results of applying the Zipf formula are shown in Figures B and C. (The orginal data are reproduced in Tables V and VI.)

Both figures clearly demonstrate the lack of proper balance in the pattern of urbanization in Ethiopia. The deviation of the observed curve of urban areas in 1970 and 1977 from their corresponding Zipf rank-size curve is remarkably large.

The figures also unequivocally identify Addis Ababa as the primate city for the whole country, and Asmara as the primate city for a specific area, the northern regions. They also suggest a change in the pattern of influence of lesser urban areas,

with Dire Dawa, Gondar and Jimma strongly emerging as the main urban centres in the east and west respectively, according to the data for 1977.

B.2 Current Migration Level and Pattern

Indicators of population concentration fall short of assessing the level and pattern of migratory movements, both current (i.e. movements that took place in in the twelve months prior to a survey or census) and intercensal. To achieve such a goal, data on the place of birth, place of previous residence, place of residence on on a specific date and/or length of residence in the present place are indispensable. These data are almost totally lacking in the case of current migration in Ethiopia, and totally lacking for intercensal migration. Even the available data on current migration are of uneven quality in their coverage of the rural and the urban population of Ethiopia.

(a) Migration of the Rural Population

In the National Sample Survey Second Round for the rural population of Ethiopia, the only information collected was temporary absence, i.e. absence from the usual place of residence for a period of less than fifty-two weeks, and reasons for absence. The resulting analysis can only be one of the level and pattern of temporary current migration. This is further limited to temporary migration between provinces by the lack of data for smaller administrative units.

Table VII summarizes the available information on current temporary migration [18] and underscores the greater tendency for people in some provinces to migrate than those in others. Major net temporary migration gains were made by five provinces in the following order. Begemdir and (now Gonder) Semien (14,301), Hararghe (13,634), Eritrea (12,100), Wollo (6,960) and Illubabor (6,150). When migration gains are compared with the resident population of the receiving provinces, however, the rank of these changes drastically as judged by the net migration change per 1,000. Illubabor (10.1) takes the lead, followed by Begemdir and Semien (8.9), Eritrea (6.4), Hararghe (5.6) and Gamo Gofa (4.5).

Current temporary net migration losses were highest in Tigrai (31,000) and, in descending order, Shoa (6,285), Keffa (4,875), Sidamo (4,800). The indicator of net migration change per 1,000 somewhat modifies this picture: Tigrai (-18.4), Keffa (-3.9), Sidamo (-2.2), Shoa (-1.3). The loss of people from Shoa province should not suggest any inference for the city of Addis Ababa, which, on the contrary, registered only a gain of 26,585 with no losses. For a detailed discussions of migratory patterns and level concerning this city see Wang (Wang, 1957); Palen (Palen, 1976, pp. 205-224); C.S.O's *Population of Addis Ababa* (C.S.O., *Population of Addis Ababa*, 1972); C.S.O.'s *Addis Ababa Manpower and Housing Sample Survey* (C.S.O., *Addis Ababa Manpower and Housing Sample Survey*, 1977).

A better appreciation of the variation and indeed the intensity of temporary current migration between provinces can be gained by considering the turnover rates shown in the last column of Table VII. These were computed according to the formula

$$\frac{M_i + M_o}{P} \times 100$$

where M_i and M_o denote respectively the number of in and-out migrants for a given area in relation to all others, and P is the resident population for the specified area

(All the figures used in this paper, unless otherwise specified, refer to January, 1970.) This rate seeks to measure the number of moves in and out of a given area in relation to the population of that area.

According to this indicator, Illubabor (20.6), Tigrai (19.4), Shoa (12.8), Keffa (12.4) and Begemdir-Semien (12.3) are the main foci of the movement of temporary migration.

The main reason for being absent from a given province was to work as a labourer (37.0%), possibly in agricultural projects and industry. A second motivation, which accounted for a substantial proportion of absence (31.0%), was to trade in something other than coffee. Additional reasons were to plant, cultivate or harvest one's own crop other than coffee or cotton (4.2%); and to trade in coffee (4.1%) (C.S.O., *The Demography of Ethiopia*, 1974. Table III. 7).

(b) Migration of the Urban Population

The urban population of Ethiopia has received greater attention from researchers and demographers. This is especially true of Addis Ababa and Asmara. The phenomenon of migration affecting these two cities has been discussed in C.S.O., *Population of Addis Ababa* (C.S.O., *Population of Addis Ababa*, 1972, pp. 26-47); C.S.O., *Addis Ababa Manpower and Housing Sample Survey* (C.S.O., *Addis Ababa Manpower and Housing Sample Survey*, 1977, pp. 6-7); Wang (Wang, 1957); Palen (Palen, 1976); and C.S.O., *Population and Housing Characteristics of Asmara* (C. S.O., *Population and Housing Characteristics of Asmara*, 1974, pp. 34-37). Furthermore, the level and pattern of migration for the two cities is characteristic of them as "primate cities".

The C.S.O. National Sample Survey, Second Round, collected some information concerning the migration affecting towns other than Addis Ababa and Asmara (C.S.O., *Demography of Ethiopia*, 1974). The relevant rates are summarized in Table VIII.

The surprising conclusion suggested by this table is that small - sized and medium-sized urban areas have higher annual migration rates than large-sized urban areas (6.9, 5.1 for small-and medium-sized urban areas, and 4.4, 5.1 and 4.0 for the larger urban classes).

In the previous round of the National Sample Survey concurring conclusions had been reached by using as indicator of migration the percentage of people born in town.

In *Urbanization in Ethiopia* (C.S.O., *Urbanization in Ethiopia*, 1972, pp. 13), 57% of the residents in towns with 2,000 to 20,000 inhabitants had been born there, while the percentage of people born in towns dropped to 46.8% for urban areas with more than 20,000 inhabitants.

B.3. Demographic and Socio-Economic Characteristics of Migrants

The data made available by the First and Second Rounds of the National Sample Survey make possible a sketchy "profile" of the rural-to-urban migrants circa 1970 (C.S.O.,*Population of Ethiopia*, 1971, pp. 22-28). (Addis Ababa and Asmara are not included in this discussion.)

In some urban areas of Ethiopia, males tended to outnumber females by 25%. The sex ratio between the two surveys was about 125. This was massively true in Dembidollo, Azezo, Asella, Adigrat, Ambo, Gimbi and Yirgalem. On the other hand, the provinces of Gojam, Tigrai Wollo and Begemdir all show low sex ratios. The towns of Dejen (s.r. 50), Fitshahe, Kobo (s.r. 75) also follow this pattern. One explanation for the low sex ratio of these provinces is that there was a higher female than male migration into the towns of these provinces during the 1960s, (except for Dejen, Fitshahe and Kobo).

In-migrants into towns are, on average, younger than both the rural and urban population. Approximately 1/3 (33% and over 830,000) of the economically active population (15-59) had once migrated into the respective towns.

A large number of female immigrants, possibly as many as a quarter of all female immigrants, are divorced; more generally, a large proportion of all migrants are single.

About 39% of those who have in-migrated are literate. Migrants thus contribute considerably to the relatively high urban literacy and, consequently, to the stagnation or slow rate of literacy increase in the rural areas they abandon.

B.4. Some Correlates of Regional Variations in Migration Flows

No correlates of regional variations in migration flows can be established on the basis of the available information.

However, the hypotheses advanced by Lars Bondestam (Bondestam, 1972), are worth testing, i.e. that migration flows are crystallizing around three main foci:

(1) Industrial towns along the Addis Ababa-Awash-Assab and Moyale axis;

(2) Coffee towns such as Jimma, Agaro, Gimbi; and

(3) Lowland towns serving the newly-established commercial farms, such as Setit Humera in north-western Gondar region, and in the Awash Valley.

Furthermore, the effect of the land reform on the reverse trend of urban-to-rural migration needs to be researched.

C. CONCLUSION

There are no viable alternatives to the scarcity and weakness of existing information on the phenomenon of migration in Ethiopia, other than the launching of a regular nation-wide census and the establishing of a vital registration system, population registers, and population surveys at regular intervals.

Even when critically qualified, however, the available demographic data warrant some generalizations about the degree of population concentration, the level and patterns of current migration, and the characteristics of people moving from rural to urban and urban to urban areas. More specifically:

(1) While the degree of population concentration in Ethiopia remains low, the process of population concentration has registered a sharp increase

between 1970 and 1977. (The Gini coefficient at those dates was 0.326 and 0.440 respectively.)

(2) Urbanization can account for most of this increase. The Durand-Palaez index shows that the percentage of urban population in Ethiopia changed between 1970 and 1977 by a staggering 53.4%, with urban centres of 5,000 or more people contributing most to the observed increase. Furthermore, during the same period, all urban areas grew at a rate of 6.3% per annum, while the population of rural areas was changing at the more moderate rate of 2.0% per annum.

(3) The phenomenon of population concentration in general, and of urban concentration in particular, cannot be explained by natural increase alone. Various migratory movemerts enter the process, with varying impact in the different regions of the country. However, the effects of permanent migratory flows cannot be accurately assessed because of the total lack of pertinent data. It can be pointed out, from information on permanent residence, that small - and medium-sized urban areas have higher migration rates than large-sized urban areas, and that in-migrants to towns tend to be males, on the average younger than both the rural population they have left and the urban population they join, and literate.

(4) Illubabor, Tigrai, Shoa, Keffa and Begemdir-Semien are the main foci of *temporary* migratory movements.

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27. *Survey of Major Towns in Ethiopia, Bulletin No.* 1. Addis Ababa, December 1968.

28. *Tables of Demographic Data (Second Round), Bulletin No.*10, Vol. II, part II. Addis Ababa, January 1974.

29. *Tables of Demographic Data for Ninety-one Towns* (Results of Urban Survey Second Round), *Bulletin No.*12, Part 1, Addis Ababa, September 1975.

30. *Tables of Demographic Data for Ninety-one Towns* (Results of Urban Survey Second Round), Bulletin No. 12, part 2. Addis Ababa, September 1975.

31. *Tables of Demographic Data for Ninety-one Towns* (Results of Urban Survey Second Round), *Bulletin No.* 12, part 3, Addis Ababa, September 1975.

32. United Nations, General Assembly, *Report of the United Nations Commission for Eritrea.* Lake Success, New York, 1950; 129 pp. (official records: Fifth Session, Supplement Number 8A/1285.)

33. *Urbanization in Ethiopia, Bulletin No.* 9. Addis Ababa, August 1972.

34. Wang, C.K. "The population of Ethiopia's metropolis", *Ethiopian Observer* 2:56-60, March 1957. (Figures, tables.)

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FOOTNOTES

1. This discrepancy in the number of towns covered by the NSS First Round is due to the definition of "urban" followed in the former publication where an area is identified as urban

   (a) if the area is a chartered municipality;

   (b) if the area comes under the jurisdiction of the Municipality Department of the Ministry of the Interior;

   (c) if the area has some sort of local officer who is responsible for collecting service taxes; and

   (d) if the area is taken to be a town by the chiefs and elders of the area (C.S.O., *Survey of Major Towns in Ethiopia*, 1968, p. 1).

   In *Urbanization in Ethiopia*, on the contrary, town was defined as "any locality with 2,000 or more inhabitants" (which is also the U.N. and E.C.A. definition; C.S.O., *Urbanization in Ethiopia*, 1972, p. 6), thus reducing the number of localities that quality for inclusion.

2. However, urban is defined in this survey as "an area in which

   (1) The buildings and houses are contiguously aligned, i.e. side by side in rows;

   (2) At least there should be one public bar in which alcoholic beverages are sold;

   (3) At least there should be one hotel, i.e. a house which serves as a lodging on a pay basis;

   (4) At least there should be one permanent shop selling different kinds of goods; and

   (5) At least there should be "one weekly market in town" (C.S.O., *Analysis of Demographic Data*, 1977, p. ii).

   Since the resulting figures would not be comparable with E.C.A. and U.N. figures for other countries, the estimates presented in *Urbanization in Ethiopia* will be used in this paper, because in that bulletin, as well as in publications conforming with the E.C.A. and U.N. usage, urban is defined as "any locality with 2,000 or more inhabitants". *Urban* is therefore defined in this paper in strictly demographic terms as any *locality with 2,000 or more inhabitants*.

3. Comment contributed by Dr. Ayenew Ejigou.

4. Made available by Ato Gabre Sellassie Mebratu.

5. Mimeo from the C.S.O. made available by Ato Hadgu Bariagaber.

6. Unpublished figures, courtesy of Ato Abdullah Hassen, C.S.O.

7. Courtesy of Ato Dejenu Bedane, Ministry of the Interior.

8. The data for the 1977 ratio were from the Ministry of Agriculture and Settlement's SASC Survey adjusted for the urban population according to C.S.O. estimates. However, C.S.O.'s original estimates for 1977 were also used for a separate computation of the Gini Concentration Ratio for 1977, and the resulting ratio was 0.313, i.e. a decrease in population concentration, a rather improbable occurrence.

9. According to the Ministry of the Interior's population head-count for 1962, the total population of Ethiopia was assessed at 24,130,000 — a figure which is slightly larger than the C.S.O.'s estimates for Ethiopia's population eight years later, i.e. 24,069,800. The Ministry of the Interior had collected these data for the second parliamentary election by sending two sets of forms to each provincial governor with orders to pass them on to their subalterns in the awrajas, weredas and mikitil weredas under their jurisdiction. The imposition of fines and other penalties were meant to ensure compliance with the order of providing an accurate head-count of the people living in their administrative districts and sending these figures back to the head office. The degree of compliance varied greatly: from no data whatsoever (e.g. Keffa), to data for one awraja only (Wollaita for Sidamo), to fairly complete coverage (Hararghe, especially the towns). The 1966 assessment followed a similar pattern (total population 27,824,119), while the 1956 assessment was meant simply to provide the U.N. office with some indications of the size of the total population of Ethiopia (20,000,000).

10. It has been suggested that the relationship of the Duncan Index to Gini Concentration Ratio is described as follows: $C.I. \leq C.R \leq 2(C.I.) - (C.I.)^2$

11. Data from C.S.O. estimates.

12. Data from the C.S.O. Survey of Urban Dwellers' Associations, mimeo by courtesy of Ato Hadgu Bariagaber.

13. Data from C.S.O. estimates

14. Data from Urban Dwellers' Associations, C.S.O. mimeo.

15. The data used for this computation were from the C.S.O. estimates for 1970 and the Urban Dwellers' Associations Survey estimates for 1977. However, even when using the C.S.O. 1977 projections, the growth rate approximated 6.3%.

16. The data used for this computation were taken from the C.S.O. estimates for 1970 and 1977. When using the C.S.O. estimates for 1970, and the estimates from the Ministry of Agriculture and Settlement SMAC Survey for 1977, the rate of growth of rural areas increased sharply to 3.7% per annum.

17. Hill, Bruce M., "The Rank-Frequency Form of Zipf's Law", *Journal of the American Statistical Association*, Vol. 69 (1974), No. 348, pp. 1017-1026.

18. For a discussion of the quality of these data and computational procedures, see *Analysis of Demographic Data of Urban Areas covered during Urban Survey* (31, pp. 42-43; Table 6, pp. 94-101).

19. Annual migration rates are obtained by dividing the average number of annual migrants by the total mid-year population of the town under study.

TABLE I

Some Indices of Population Concentration and Urbanization in Ethiopia

1962 Assessments and 1970, 1977 Survey Estimates

UNIT OF MEASUREMENT	TYPE OF INDEX	INDEX 1962	1970	1977
1 Provinces/Regions	a) Lower bounds of Gini Concentration Ratio	.316	.322	.436
	b) Gini Ratio estimates	.320	.326	.440
	c) Duncan Index of Concentration given by $= {}^1/_2 \sum_{i=1}^{K=N} \lvert X_i - Y_i \rvert$ where X_i and Y_i are respectively uncumulated % population and land area	.233	.233	.311
2 All designated urban areas (1970-1977)	d) Durand-Palaez Index of change of % urban during 1970-1977 given by $\frac{U_t - U_o}{U_o}$	—	—	53.59
3 Urban areas with 5,000 or more people	e) "	—	—	63.6
4 Urban areas with less then 5,000 people	f) "	—	—	1.9
5 All designated rural areas except Eritrea and Tigrai (1970-1977)	g) "	—	—	29.1
6 All designated urban areas (1970-1977)	h) Annual rate of growth given by $r = \frac{\log \frac{P_t}{P_o}}{t} - 1$	—	—	6.3 p.a.
7 All designated rural areas except Eritrea and Tigrai (1970-1977)	i) "	—	—	2.0 p.a.

TABLE II

Regions of Ethiopia arrayed by Population Density, 1962*

Region **	Population (000)	Area in Km. (000)	Density	Proportion	
				Population (x_i)	Area (y_i)
TOTAL	24,130	1222.1	19.7		
1. Bale	800	124.6	6.4	.0331	.1019
2. Hararghe	2,030	259.7	7.8	.0842	.2125
3. Eritrea	1,950	117.6	16.6	.0809	.0982
4. Illubabor	800	47.4	16.9	.0331	.0388
5. Sidamo	2,000	117.3	17.0	.0829	.0960
6. Kefa	1,030	54.6	18.9	.0427	.0447
7. Gamo Gofa	800	39.5	20.2	.0331	.0323
8. Wellega	1,600	71.2	22.5	.0663	.0583
9. Arssi	600	23.5	25.5	.0249	.0192
10. Tigrai	1,800	65.9	27.3	.0746	.0539
11. Gojam	1,800	61.8	29.1	.0746	.0506
12. Wello	2,430	79.4	30.6	.1007	.0650
13. Gondar	2,430	74.2	32.7	.1007	.0607
14. Shoa	4,060	85.4	47.5	.1682	.0699

* **Source:** Ministry of Interior, courtesy of Ato Dejene Bedane.

** The names of the regions have not been standardized.

TABLE III

Regions of Ethiopia Arrayed by Population Density 1970*

Region **	Population (000)	Area in Km. (000)	Density	Proportion	
				Population (x_i)	Area (y_i)
TOTAL	24,069.8	1222.1	19.7	1.0000	1.0000
1. Bale	683.8	124.6	5.5	.0284	.1019
2. Hararghe	2440.1	259.7	9.4	.1014	.2125
3. Illubabor	611.8	47.4	12.9	.0254	.0388
4. Eritrea	1893.8	117.6	16.1	.0787	.0962
5. Sidamo	2190.3	117.3	18.7	.0910	.0960
6. Gamo Gofa	781.7	39.5	19.8	.0325	.0323
7. Begemdir	1604.3	74.2	21.6	.0666	.0607
8. Wollega	1577.2	71.2	22.1	.0655	.0583
9. Kefa	1260.3	54.6	23.1	.0524	.0447
10. Wollo	1974.1	79.4	24.9	.0820	.0650
11. Tigrai	1688.6	65.9	25.6	.0701	.0539
12. Gojam	1590.4	61.8	25.7	.0661	.0506
13. Arussi	850.8	23.5	36.2	.0353	.0192
14. Shoa	4992.6	85.4	58.5	.2074	.0694

* **Source:** C. S. O., *The Demography of Ethiopia*, Addis Ababa, 1974, p. 2.

** The names of the regions have not been standardized.

TABLE IV

Regions of Ethiopia Arrayed by Population Density 1977*

Region **	Population	Area in Km. (000)	Density	Proportion	
				Population (x_i)	Area (y_i)
TOTAL	27,174,679	1,038,600	26.2	1.000	1.000
1. Bale	550,840	124.6	4.4	.0203	.1200
2. Hararghe	2,313,755	259.7	8.9	.0851	.2500
3. Gamo Gofa	643,288	39.5	16.3	.0237	.0381
4. Illubabor	888,759	47.4	18.7	.0327	.0456
5. Sidamo	2,535,206	117.3	21.6	.0933	.1129
6. Wollega	1,906,230	71.2	26.8	.0701	.0685
7. Gondar	2,011,171	74.2	27.1	.0741	.0714
8. Gojam	2,109,219	61.8	34.1	.0776	.0595
9. Wollo	2,805,538	79.4	35.3	.1032	.0764
10. Kefa	1,955,109	54.6	35.8	.0719	.0526
11. Arssi	1,515,618	23.5	64.5	.0558	.0226
12. Shoa	7,939,946	85.4	93.0	.2922	.0823

* **Source:** Ministry of Agriculture and Settlement, *Rural Population and Employment Agriculture*. Addis Ababa, 1978, p. 49; adjusted to include urban population according to C. S. O. unpublished estimates for 1977, courtesy of Ato Abdullah Hassen, C. S. O.

** The names of the regions have not been standardized.

TABLE V

Population of Ethiopia's Major Cities 1970*

City **	Population
1. Addis Ababa	795,900
2. Asmara	218,360
3. Dire Dawa	59,400
4. Dessie	44,810
5. Harar	44,580
6. Jimma	39,740
7. Nazreth	37,620
8. Gondar	34,630
9. Keren	30,000
10. Mekelle	27,100
11. Debre Zeit	26,880
12. Debre Markos	26,320
13. Agordat	24,000
14. Bahr Dar	20,480

* **Source:** C. S. O., *Urbanization in Ethiopia*. Addis Ababa, 1972.

** The names of the cities have not been standardized.

TABLE VI

Population of Ethiopia's Major Cities 1977*

City**	Population
1. Addis Ababa	1,104,500
2. Asmara	352,700
3. Dire Dawa	79,862
4. Nazreth	68,055
5 Gondar	65,814
6. Jimma	62,977
7. Harar	58,981
8. Dessie	57,408
9. Debre Zeit	44,244
10. Mekelle	39,910
11. Debre Markos	34,368
12. Keren	31,692
13. Bahr Dar	31,105
14. Massawa	24,878

** The names of the cities have not been standardized.

* **Source:** Number of Provincial towns with two thousand and above Urban Dwellers, number of Urban Dwellers' Cooperative Work Associations & Population-Size, 1977-78 Mimeo (Amharic), by courtesy of Hadgu Bariagaber.

TABLE VII

In, Out and Net Current Migration for 1969/70 Between Provinces of Ethiopia*

Population	Province Resident	Temporary Migrants 1969/1970			Net Migration Change	Turnover rate
		In	Out	Net	per 1000	per 1000
Arussi	850,800	1,300	2,800	—1,500	—1.8	4.8
Bale	683,800	4,120	1,800	2,320	3.4	8.6
Begemdir & S	1,604,300	17,001	2,700	14,301	8.9	12.3
Gamo Gofa	781,700	3,910	400	3,510	4.5	5.5
Gojam	1,590,400	4,130	3,500	630	.4	4.8
Hararghe	2,440,100	14,550	916	13,634	5.6	6.3
Illubabor	611,800	9,370	3,220	6,150	10.1	20.6
Keffa	1,260,300	5,400	10,275	—4,875	—3.9	12.4
Shoa	4,922,600	28,395	34,680	—6,285	—1.3	12.8
Sidamo	2,190,300	1,320	5,400	—4,800	—2.2	3·1
Tigrai	1,688,600	800	31,900	—31,100	—18.4	19.4
Wellega	1,577,200	1,840	11,130	710	.4	8.2
Wollo	1,974,100	3,600	10,560	6,960	3.5	7.2
Eritrea	1,893,800	12,100	—	12,100	6.4	6.4
Not Stated		1,250	—	1,250	—	
TOTAL	24,069,800	119,281	119,281	—	—	—

** The names of the provinces have not been standardized.

* **Source:** Central Statistical Office, *The Demography of Ethiopia. Statistical Bulletin No.* 10, Table XXXVII, p. 98. Addis Ababa, 1974.

TABLE VIII

Average Rate of Migration by Sex and Size-Class of Urban Areas* 1970

Size-class of Urban Areas	Sex	Average Annual Migration
Under 2,000	M	6.4
	F	7.2
	M & F	6.9
2,000 — 4,999	M	4.7
	F	5.5
	M & F	5.1
5,000 — 9,999	M	4.5
	F	4.4
	M & F	4.4
10,000 — 19,999	M	5.3
	F	4.9
	M & F	5.1
20,000 and over	M	3.6
	F	4.3
	M & F	4.0
TOTAL	M	4.4
	F	4.6
	M & F	4.5

* **Source:** Central Statistical Office, *Analysis of Demographic Data Of Urban Areas covered during Urban Survey Second Round* 1969-1971. Addis Ababa, December 1977, *Statistical Bulletin No.* 16, p.44.

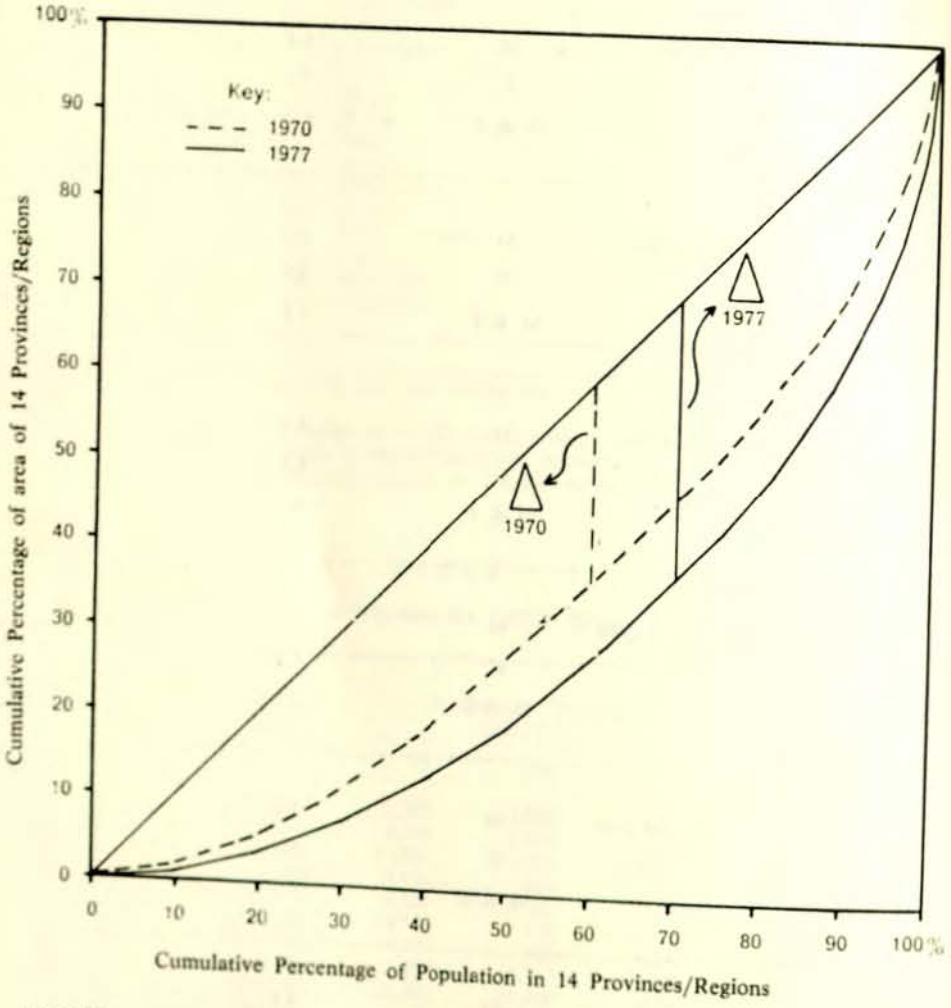

FIGURE A — THE LORENZ CURVE OF POPULATION CONCENTRATION FOR ETHIOPIA 1970 and 1977

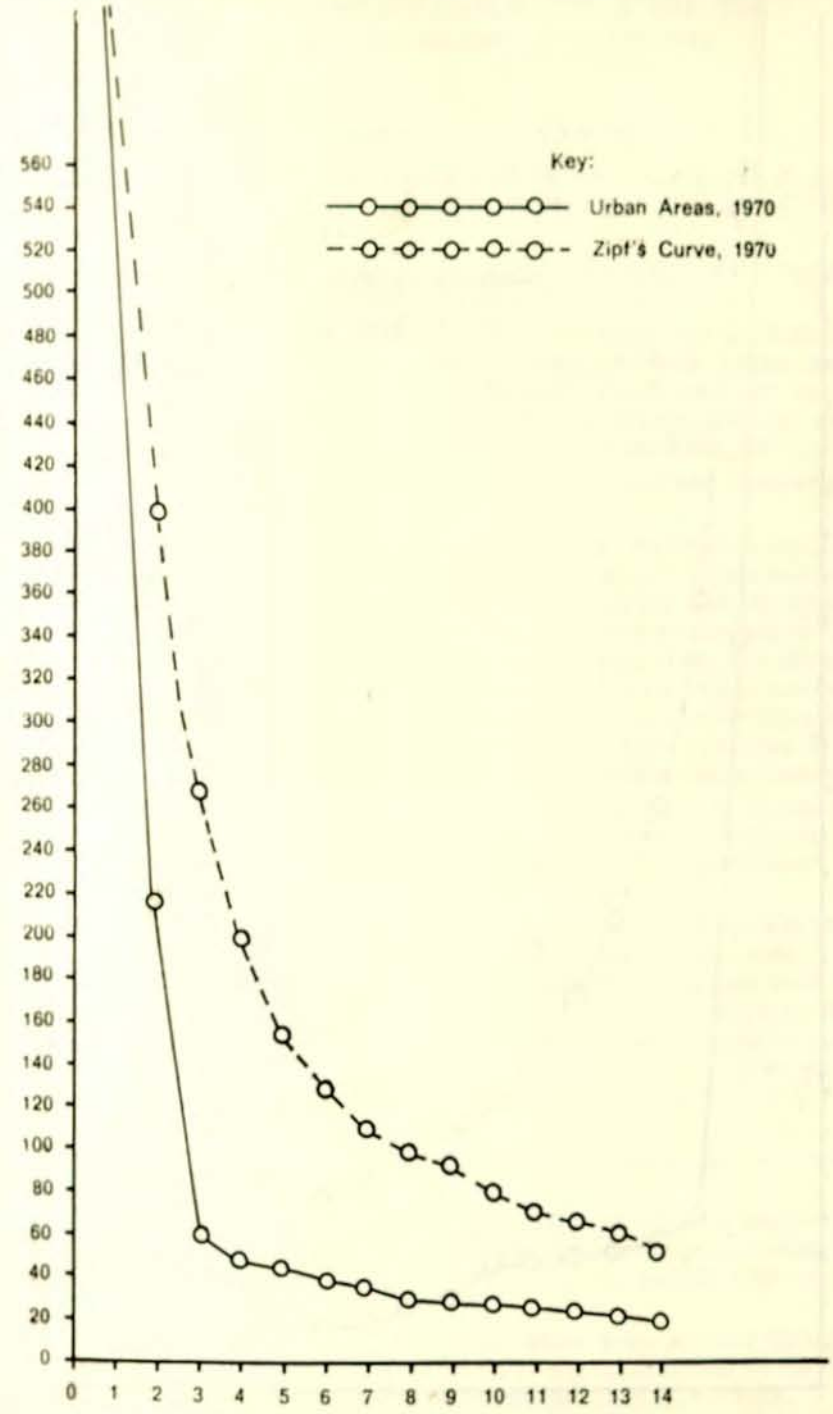

FIGURE B — RANK AND SIZE OF URBAN AREAS OF ETHIOPIA 1970 AND CURVE OF ZIPF'S RANK-SIZE RULE.

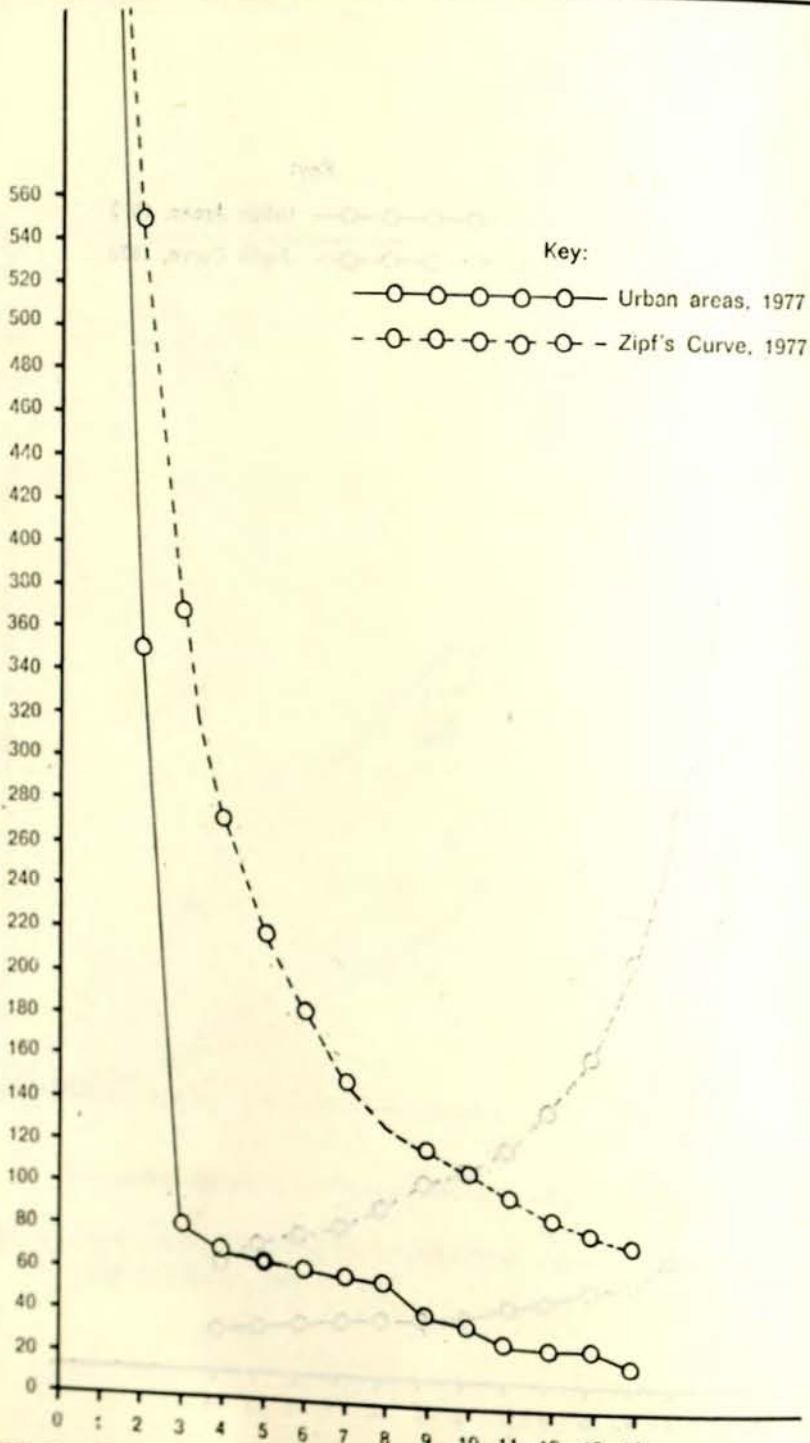

FIGURE C—RANK AND SIZE OF URBAN AREAS OF ETHIOPIA, 1977 AND CURVE ZIPP'S RANK-SIZE RULE.