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HOUSEHOLD SIZE IN ETHIOPIA: VARIATIONS AND SOME RECENT CORRELATES

M. Rafiq*
Assefa Hailemariam*

ABSTRACT. The paper examines variations in the average household size in Ethiopia since the mid-1960s and concludes that lack of trend in size is caused by a special set of circumstances prevailing in the country over the last two or three decades. The paper also provides some evidence that the urban household size has been increasing quite substantially whereas the size in rural areas has shown a decline indicating that the same set of circumstances has operated on urban and rural areas differently. Some other correlates of household size have also been explored.

1. INTRODUCTION

An authoritative review of the field of population studies carried out in 1973 noted that "... only scattered efforts have been made to analyse variations of the size and structure of families and households and factors affecting them" [14, p. 335]. Another influential review of the field indicated that the consciousness of importance of households and families[1] as units of economic production and consumption, decision-making governing reproduction and the life-cycle of the family, living arrangements, education, savings, housing, work, social security and social welfare, and the like, grew gradually and only in the more recent past [12, pp. 298-299]. Somewhat

*Demographic Training and Research Centre, Addis Ababa University. The authors are solely responsible for the views expressed in this paper. The paper has been condensed from an earlier unpublished work with identical title.

earlier, Bogue had also stressed that greater attention should be paid to the household information which was readily accessible at a relatively small additional cost because it was routinely collected as an adjunct to modern censuses and surveys using the household survey approach [1, pp, 367-368].

The United Nations, in recognition of the usefulness of the household-level information, has played a pivotal role, especially in developing countries, in standardizing the collection, compilation and publication of household data through its technical assistance and the recommendations contained in its relevant publications [16, 17]. The importance of household information for planning purposes was underscored further by a United Nations publication dealing with the methodology for projecting households and families [15]. As a result of these efforts, it is only in the relatively recent past that a fairly large internationally comparable data set on selected aspects such as distribution of households and population by size-class of household has been made available through the United Nations yearbooks and other publications.

The recent attention received by the household-level data has led to some interesting generalizations. It was noted in 1973 that an "... important trend in the theoretical development of demography of families and households is found in a series of studies on interrelationships between the changes in size and structure of the family and household and demographic transition in the face of the processes of modernization, industrialization and urbanization" [14, p. 335]. These overall processes, it is recognized, are linked to the size and structure of household by demographic variables such as sex-age composition of population, fertility and mortality, marital composition of population, internal migration, age at marriage, as well as, by economic and cultural variables such as income, access to housing and need for

privacy. It has been noted as an empirical generalization that prominent features of changes in household size and structure in countries experiencing the first-phase of demographic transition marked by "... declining mortality, whether rapid or moderate, combined with relatively constant and very high fertility ..." [14, p. 340] are likely to include; (1) Moderate increases in average size of households; (2) Moderate increases in relatively large-size (six persons or more) households and moderate decreases in relatively small-size (three persons or less) households; and, (3) Small increases or stability in the proportion of nuclear families and moderate increases in the proportion of one-person household in many countries [14, p. 340].

The present paper pursues two narrow and quite elementary goals. Firstly, it examines the changes in the average household size in Ethiopia since the mid-1960s. Some international and regional comparisons as well as changes in size by residence type (rural-urban dichotomy) are also considered in the paper. For lack of relevant data, other structural aspects such as distribution of households by size-class receive only marginal attention. Secondly, the paper undertakes a rudimentary search for recent correlates of household size based on the data from the first population and housing census of Ethiopia conducted in May 1984. Only a limited number of variables are investigated as correlates mainly because the pertinent data have been released only for these variables.

2. DATA AND METHODS OF ANALYSIS

A number of sample surveys with varying size and design as well as scope of coverage (i.e., whether both rural and urban populations or whether total or only a part of the country, were covered) have been conducted in Ethiopia since 1964. With the exception of the 1984 census data, all of the Ethiopian data in

this paper come from the sample surveys. The 1965 data, for example, are taken from the National Sample (First Round) carried out during 1964 - 1967. The 1970 data are results of the National Sample Survey (Second Round) undertaken between November 1969 and May 1971. Similarly, the 1980 data are obtained through the 1981 Demographic Survey carried out as a part of recently instituted national integrated household surveys programme in the country.[2] (Some of the relevant official reports on these surveys are listed in the source for Tables 1 and 3 in this paper.)

All *ex post facto* analyses face, inter alia, methodological complications, and the research reported here is not free from them. As may be expected, the sampling errors are bound to vary from survey to survey, and this raises some questions concerning comparability of data over time. Another complication arises from the fact that upto one-fifth of the total population was not covered by various surveys. The country level official estimates quite often combine survey data with the non-survey data for the areas which were not covered by the survey.[3] The effect of this compromise on household size is unknown. The sample surveys, it may also be noted were carried out in different parts of the country over fairly long periods of time; at times over a few years. This raises some theoretical issues regarding the efficacy of computing the household size for the country from them. It is also worthwhile to note that the pertinent data for inferring variation in size are available for selected dates covering only about twenty years. In principle, twenty years are too short to afford the study of long-term secular trends. There is also the fundamental problem of deducing longitudinal inferences from cross-sectional data. Another data constraint emerges from the fact that in most cases the published average household size is not accompanied by the distribution of households by their size-class. This, of course,

precludes extensive analysis of the household structure. While comparing rural and urban areas, one should also keep in mind that the published household size for urban areas quite often excludes the largest city, Addis Ababa.

Some of the important assumptions utilized in the analysis presented here should be noted. Firstly, whenever the average household size, either for the total population of the country or for the rural areas was not available, the two were assumed to be equal. This would not be a serious divergence from reality in a country which was 11.3 per cent urban in May 1984 and exhibited only moderate rural-urban differentials in size in the recent past. Secondly, the average household size for 1984 for rural, urban and total population has been computed on the basis of averages available for 75 Awrajas for which both rural and urban averages were published separately.[4] Most probably this estimate of the country level averages is not likely to be too much removed from reality; and since the goal is not a high level of precision it may be accepted for the purpose of analysis presented in this paper. (The country-level averages are not yet available from the published sources.) There is, however, one additional related issue which deserves a comment at this point. While computing the urban size of household for the country by the foregoing procedure, the information for Addis Ababa was not used. At least in 1984, this omission must have caused a downward shift in the urban household size for the country, because the reported size in Addis Ababa (5.2 persons per household) exceeds the average for other urban areas [4, p. 67].[5] This is bound to be true because Addis Ababa had 29.8 per cent of total urban population of the country. Thirdly, it has been assumed that there are no systematic errors in coverage and/or conceptual discrepancies over time which might render comparative study of household size invalid.

In the context of search for correlates of household size, the analysis of variance technique has been employed. The adoption of this technique can be defended on two grounds. Firstly, the published data provide household size distributions by Awrajas, Regions and Residence Type (rural/urban). These variables are nominal and thus can be conveniently analyzed by the analysis of variance technique. Secondly, the lowest level of disaggregation available for study of correlates is the Awraja level average which readily approximates to assumptions involved in the use of analysis of variance because it utilizes large number of households in its computation.

3. VARIATIONS IN HOUSEHOLD SIZE

3.1 Overall Size for Ethiopia

The average household size for Ethiopia for various dates between 1965 and 1984 appears in Table 1. Some additional information on other countries and regions of the world has also been presented in the table for comparative purposes.

The Ethiopian data over the 1965 - 1984 period appear to be marked by fairly large fluctuations includin some quite pronounced reverses. Such irregularities were observed in a number of countries including the United Kingdom, Sweden and France while they were passing through various phases of their demographic transition. However, in the recent past, the mode in the developing countries appears to be an increase in the average household size. Such increases has, for example, been registered over the past two or three decades in Panama, Mexico, Republic of Korea, India, El Salvador, Iran, Ceylon, and the Philippines [14, pp. 340-341]. The Ethiopian data do not conform to this pattern and there is also an unusually large decline in the household size in the 1980s.

Table 1. AVERAGE HOUSEHOLD SIZE, ETHIOPIA, AND SELECTED REGIONS AND COUNTRIES OF THE WORLD: SELECTED DATES

Country/ region	Year(s) of census/survey/ estimate	Average household size
A. Ethiopia[a] (various dates)		
Ethiopia	1965	4.7
	1970	4.5
	1978	4.9
	1979	4.6
	1980	4.8
	1984	4.3[b]
B. Regions of the World (1965)		
World	1965	4.54
Developing regions	1965	5.22
More developed regions	1965	3.54
Africa	1965	4.99
Eastern Africa	1965	4.93
Northern Africa	1965	5.15
Asia (excluding USSR)	1965	5.17
Latin America	1965	5.09

C. Other Countries (recent dates)

Egypt	1976	5.2
Mali	1976	5.1
Tanzania	1978	4.8
Afganistan	1979	6.2
Indonesia	1980	4.8
Sri Lanka	1981	5.2
Japan	1980	3.2
Brazil	1980	4.2
Bulgaria	1975	3.1
Hungary	1980	2.8
USA	1980	2.7
USSR	1979	4.0

Source: For Part A: [10, p. 8; 4, pp. 68-71]. For Part B: [14, p. 337]. For Part C: [13, Table 41].

[a]Strictly speaking averages refer to rural areas only. However, in view of low level of urbanization (11.3 per cent in 1984) and moderate urban-rural size differentials, it has been assumed that rural averages apply to the whole population.

[b]Estimated as unweighted averages of the figure for the 75 Awrajas with rural and urban averages made available separately. (The overall average size for the country is not available from published sources.)

Another feature of the Ethiopian data is that the average household size in 1965 fell short of the comparable average observed for the developing countries as a group (4.7 as against 5.22). On the other hand, the Ethiopian average is closer to the

average for the East African region - - a fact which may, in part, be explained by the onset of mortality decline in this part of the world. Table 1 also indicates that the 1984 household size in Ethiopia falls short of the average observed between 1976 and 1980 in Egypt, Mali, Tanzania, Afganistan, Indonesia and Sri Lanka.[6] As the later parts of this paper would suggest, the 1984 size is more likely to be generated by a peculiar set of circumstances and should not be considered part of a declining trend in household size. It is more likely that the household size in Ethiopia will register a rise in the future before it sets on its downward course.

3.2 Size by Type of Residence

The variation in household size for rural and urban areas can be reconstructed for the 1965 - 1984 period from the Ethiopian surveys and the 1984 census. It is evident from Table 2 that whereas household size in rural areas shows the same irregularities as noted for the country as a whole, the urban household exhibits an upward trend. (If Addis Ababa with 29.8 per cent of the total urban population and 5.2 persons per household was included in the 1984 average, the overall average for urban areas would be larger than 4.1, and the 1965 - 1984 trend would have become even more conspicuous.) It is often asserted that fertility in urban areas in developing countries has been declining. If this assumption holds in Ethiopia, then the joint effect of declining mortality and the double-up households far outweights the effect of fertility decline.[7] It is also likely that the urban household size may register further increase because the two factors contributing to its increase over the more recent past can still play their role for some time in future.

Table 2 also indicates that the 1984 rural-urban difference in household size in Ethiopia was unusually small. The difference

Table 2. AVERAGE HOUSEHOLD SIZE IN ETHIOPIA AND SELECTED OTHER COUNTRIES BY TYPE OF RESIDENCE: SELECTED DATES

Country	Year	Household Size	
		Urban[a]	Rural
Ethiopia	1965	na*	4.7
	1970	3.6	4.5
	1978	4.1	4.9
	1979	na*	4.6
	1980	4.2	4.8
	1984	4.1[b]	4.3[b]
Egypt	1976	4.9	5.5
Tanzania	1978	4.2	4.9
Brazil	1980	4.1	4.5
USSR	1979	3.9	4.1
Bulgaria	1975	3.0	3.3
Hungary	1980	2.7	3.0

Source: For Ethiopia: Same as in Table 1. For other countries: [13, Table 41].

[a]Excludes Addis Ababa from the Ethiopian data.

[b]See note b of Table 1.

*na stands for not available. This symbol is also used in other tables.

observed in Ethiopia was, for example, smaller than that observed in Egypt, Tanzania, and Brazil. It may be added that generally such narrowing of difference between rural and urban household size is more characteristic of demographically mature countries than the developing countries. It is likely that the rural-urban difference in Ethiopia would become larger in the future because rural areas may achieve benefit from mortality decline comparable to urban areas only after a certain time lag.

Since the residence type (rural-urban dichotomy) tends to differentiate between variations in household size over time, it is considered worthwhile to examine changes in the rural and urban household size at the level of administrative regions. Table 3 and Figure 1 present evidence of changes in household size in the rural areas. Only eleven regions are included in this analysis because pertinent data for the 1965-1984 period are available only for these regions.

The comparison of 1965 and 1984 indicates that only one region registered a small increase in the rural household size over the period. All other regions either failed to register any change or exhibited a decline in size. It is, however, important to note that the transition over the period was hardly monotonic. In fact, for analytical purposes, the 1965-1984 period can be divided into three distinct phases. Between 1965 and 1970, only three regions showed a gain in size; all others underwent a decline in size. Between 1970 and 1980 almost all regions registered an increase in size. (Shoa maintained the same size over the 1970-1980 period.) It must be mentioned that the increase over 1970-1980 in the rural household size was so conspicuous in most regions that had it continued after 1980, the average household size in 1984 in the rural areas would have been much larger than what was reported. The rapid decline in size in most regions after

Table 3. RURAL HOUSEHOLD SIZE BY REGION : SELECTED DATES

Region	Rural household size			
	1965	1970[a]	1980	1984
Arssi	5.03	4.6	5.4	4.9
Gamo Gofa	4.26	4.1	4.9	4.3
Gojam	4.47	4.8	4.9	4.3
Gonder	4.41	4.7	5.1	4.4
Hararghe	5.05	4.7	4.9	4.4
Illubabor	4.14	3.7	4.2	4.1
Keffa	3.94	4.0	4.7	4.1
Shoa	4.97	4.5	4.5	4.4[b]
Sidamo	4.80	4.5	5.1	4.4
Wollega	5.03	4.5	5.2	4.7
Wollo	4.39	4.2	4.4	4.1

Source: For 1965: [5. p. 16]. For 1970: [3, p. 14]. For 1981: [9, p. 38]. For 1984: [4. pp. 68-71].

[a]For the total popultation. Assumed to apply to the rural population.

[b]Excluding Addis Ababa.

1980 has, however, reversed the trend to the extent that the average size in a majority of regions in 1984 was smaller than in 1965. Some of the concomitants of these phases would be identified in the final section of this paper.

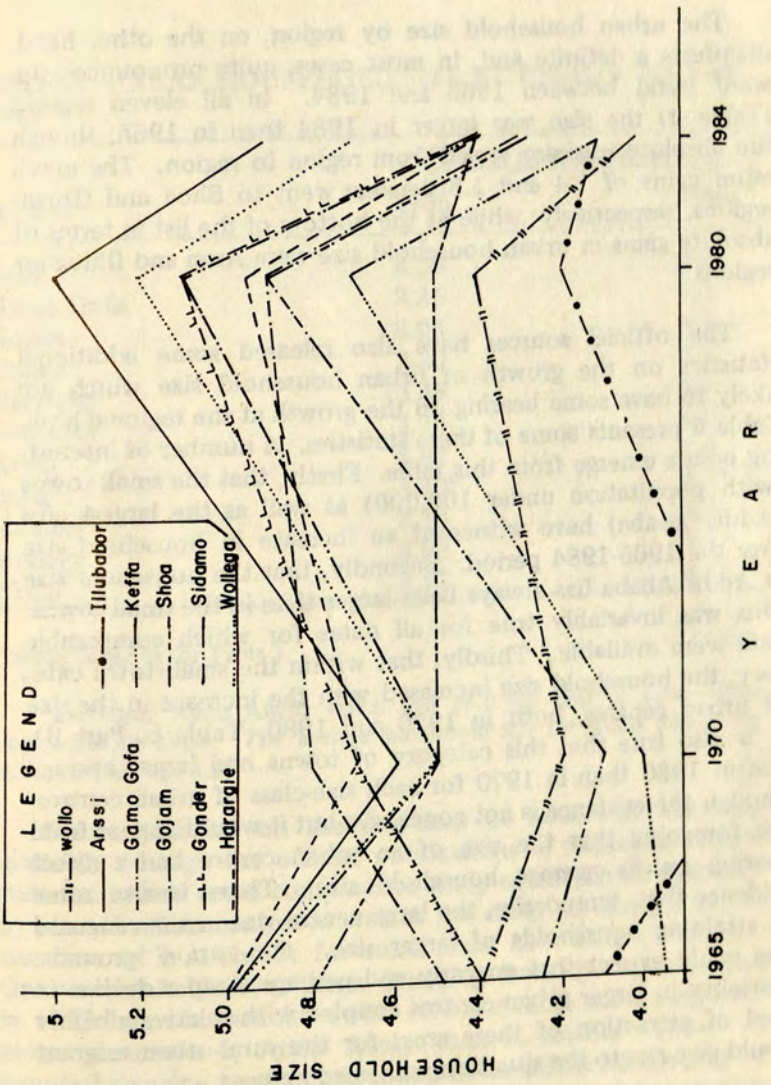

Figure. I. VARIATIONS IN RURAL HOUSE HOLD SIZE: 1965–1984

The urban household size by region, on the other hand, manifests a definite and, in most cases, quite pronounced upward trend between 1965 and 1984. In all eleven regions (Table 4) the size was larger in 1984 than in 1965; though the absolute increase varied from region to region. The maximum gains of 1.4 and 1.3 persons went to Shoa and Gojam regions, respectively; while at the bottom of the list in terms of absolute gains in urban household size were Arssi and Illubabor regions.

The official sources have also released some additional statistics on the growth of urban household size which are likely to have some bearing on the growth at the regional level. Table 5 presents some of these statistics. A number of interesting points emerge from this table. Firstly, that the small towns (with popultation under 100,000) as well as the largest city (Addis Ababa) have witnessed an increase in household size over the 1965-1984 period. Secondly, that the household size in Addis Ababa has always been larger than in the small towns. This was invariably true for all dates for which comparable data were available. Thirdly, that within the small town category, the household size increased with the increase in the size of urban centres, both in 1970 and 1980 (Table 5, Part B). It is also true that this category of towns had larger average size in 1980 than in 1970 for each size-class of urban centres. Though the evidence is not conclusive but it would appear from the foregoing that the size of an urban centre had a direct bearing on its average household size. There is also some evidence that, temporally, the large centre was in the vanguard in attaining households of larger size. On *apriori* grounds, one could expect that an early and perhaps steeper decline in mortality in larger urban centres coupled with relatively higher level of attraction of these areas for the rural-urban migrant would give rise to the situation witnessed here.

Table 4. URBAN HOUSEHOLD SIZE BY REGION: 1965 and 1984

Region	Urban household size	
	1965	1984
Arssi	3.39	3.8
Gamo Gofa	3.35	4.1
Gojam	3.02	4.3
Gonder	3.30	4.1
Hararghe	3.49	4.1
Illubabor	3.75	4.0
Keffa	3.62	4.4
Shoa[a]	3.40[a]	4.7[a]
Sidamo	3.76	4.3
Wollega	3.82	4.7
Wollo	3.27	4.1

Source: Same as for Table 1.

[a]Excluding Addis Ababa which had 29.8 per cent of total urban population in 1984. The average household size for Addis Ababa for the same year was 5.2.

Some statistics on the size-class of household are also available through the official publications in Ethiopia. These statistics afford some comparative study of household structure by size of urban centres as well as the study of changes in the size-class of households for rural areas over time (Table 6). One unmistakable conclusion emerging from the table is that in 1978 large households (with seven or more members) were more numerous in Addis Ababa than in smaller towns. A counterbalancing tendency is found in the relative frequency of small households with three or less members. Small households are more frequently found in small towns than in Addis Ababa.

Table 5. COMPARISON OF HOUSEHOLD SIZE IN SMALL TOWNS WITH ADDIS ABABA FOR SELECTED DATES; AND HOUSEHOLD SIZE FOR SMALL TOWNS BY SIZE–CLASS OF TOWN FOR 1970 and 1980

A. Comparison of Small towns and Addis Ababa[a]

	Small towns (<100,000 Population)	Addis Ababa[a]
1965	na	3.5
1970	3.6	3.9
1976	na	4.5
1978	4.1	4.4
1980	4.2	na
1984	4.1	5.2

B. Household size by size-class of Small towns: 1970 and 1980

	1970	1980
Less than 2,000	3.3	3.6
2,000 -- 4,999	3.4	4.2
5,000 -- 9,999	3.6	4.3
10,000 -- 19,999	3.6	4.5
20,000 -- 99,999	3.6	4.4

Sources: For 1976: [2, p. 17]. For all others: Same as in Table 1.

[a]Addis Ababa had a population of 683, 530 in October 1967 [5, p. 4]. In May 1984, the population of Addis Ababa was 1,142,575 [4, pp. 68-71].

Tabe 6. PER CENT DISTRIBUTION OF HOUSEHOLDS BY SIZE-CLASS OF HOUSEHOLD FOR SEVENTEEN SMALL TOWNS[a] AND ADDIS ABABA, 1978; AND PER CENT DISTRIBUTION OF HOUSEHOLD BY SIZE-CLASS OF HOUSEHOLD FOR RURAL AREAS, 1970 AND 1980

A. Distribution by size-class, urban areas, 1978

Size - class of household	Seventeen Small towns	Addis Ababa[b]
Small (1 - 3 persons)	49.48	44.0
Medium (4 - 6 persons)	32.72	34.8
Large (7 or more persons)	17.80	21.2
Total	100.00	100.0

B. Distribution by size-class, rural areas, 1970 and 1980

Size - class of household	Rural areas	
	1970	1980
Small (1 - 3 persons)	37.3	31.5
Medium (4 - 6 persons)	47.2	48.0
Large (7 or more persons)	15.5	20.5
Total	100.0	100.0

Sources: For 17 towns: [7, p. 52]. For Addis Ababa: [8, p. 12]. For 1970 rural data: [3, p. 38]. For 1980 rural data: [9, p. 38].

[a]The seventeen small towns varied in size from 9,877 to 73,466 in 1978. Officially, they were designated as "major" towns.

[b]The population of Addis Ababa in 1978 was reported as 1,167,315.

The data on the rural areas in Table 6 is also of some interest because it reflects on the temporal aspects of structural changes in households. (Parenthetically, it may be mentioned that what may be true for the rural areas might as well be true for the total country because only 11.3 per cent of total population in 1984 lived in urban areas.) Over the 1970-1980 period, the relative number of small households decreased from 37.3 to 31.5 per cent. On the other hand, the proportion of large households in rural areas increased from 15.5 to 20.5 per cent. These structural changes occurred while the size of rural household changed from 4.5 to 4.8.

A comparision of the 1978 Addis Ababa household structure with that of rural areas in 1980 also merits consideration. The proportions of large households differed by less than one percentage point. However, the other two categories, small and medium size households, showed almost a complete reversal i.e., there were more small households in Addis Ababa while there were more medium-sized households in the rural areas. It may be noted that this situation prevailed when the average household size in Addis Ababa was 4.4 and the corresponding size for the rural areas was 4.8. This, of course, should not make us lose sight of the possibility that the situation may have changed dramatically in Addis Ababa between 1978 and 1984, because the average size rose from 4.4 to 5.2 persons per household over this period. (The data on structural aspects other than size for 1984 would be released by the census authorities at some later date.)

It would be of some statistical interest to see whether the changes over the 1965-1984 period at the regional level in the rural and urban household size were of such a magnitude that they could not be attributed to chance alone. Since only four paired comparisons are likely to be of substantive interest,

therefore Table 7 provides t-statistic for these four combinations. It is important to note that these comparisons are based on the regional level information.

The table shows that the rural-urban differentials in 1965 were statistically significant. In other words, substantial rural-urban household size differentials were in existence in 1965. The difference between rural size of 1965 and that of 1984 was also statistically significant at the 0.05 level of significance but not at 0.01 level; with rural size in 1965 exceeding that in 1984. The urban differences between 1965 and 1984 were also too large to be caused by chance. The urban household size in 1984 was larger than urban household size in 1965. However, the rural-urban household size differences in 1984 were too small to be statistically significant. It appears that the opposing tendencies in the rural and urban areas in terms of changes in household size have rendered the differences to statistical insignificance.

4. IN SEARCH OF RECENT CORRELATES

The 1984 census has released tabulation of the average household size by the type of residence at the Awraja level. The analysis presented here is based on 75 Awrajas for which both rural and urban averages were made available through the census preliminary report. These Awrajas fall in 12 regions. An additional point of some methodological importance is that the conclusions presented here are based on the Awraja level observations.

The results of an analysis of variance exercise are presented in Appendix I. Three variables for which requisite tabulations were available have been included in the analysis as correlates

Table 7. PAIRED COMPARISON OF DIFFERENCES[a] OF MEANS BETWEEN AVERAGE HOUSEHOLD SIZE IN RURAL 1965 (R_{65}), URBAN 1965 (U_{65}), RURAL 1984 (R_{84}) AND URBAN 1984 (U_{84}) FROM REGION LEVEL DISTRIBUTIONS

Comparison	Average difference[b]	Computed t	Degrees of freedom	Level of significance
$R_{65} - U_{65}$	1.0845	8.492	10	$p<0.01$
$R_{84} - U_{84}$	0.1364	1.198	10	$p>0.10$
$R_{65} - R_{84}$	0.2173	2.814	10	$0.01<p<0.05$
$U_{65} - U_{84}$	-0.7309	8.667	10	$p<0.01$

[a]Derived using data in Tables 3 and 4.

[b]Average of 11 differences observed for the comparison under consideration.

of household size: the type of residence (treated as a dichotomous variable), the Awraja, and the region. Both one-way and two-way classifications have been assumed and analyzed.

The most important finding of this analysis is that all three variables make significant contribution to the overall variation in household size. The residence type as a variable, taken alone as well as in combination with the Awrajas and the regions, shows a statistically significant relationship with the size of household. It may also be added that the inter-regional differences in size in the rural areas as well as in the urban areas were

all too large to be explained by chance alone. This was also true of the household size for the total population (i.e., rural and urban population taken together). Another interesting feature of the analysis is that inter-Awraja differences were also significant. The overall picture emerging from the analysis of variance also suggests that quite a large part of variability can be explained by the three variables considered here. It may also be mentioned that the removal of some Awrajas in order to make the interaction term (Appendix I, parts f and g) statistically insignificant does not decrease the efficacy of the three variables in terms of their explanatory relevance.

5. DISCUSSION AND CONCLUDING OBSERVATIONS

It is hard to infer any difinite trend in the household size between 1965 and 1984 for the country as a whole. In fact, each relative peak is invariably followed by a trough, almost as if to restore the balance. All peaks (1965, 1978 and 1980) are almost undistinguishable and the troughs appearing in 1970 and 1979 are also of very nearly equal size. Probably the more pertinent feature is not the lack of a trend but the appearance of these irregularities and reverses. We will now examine the demographic and other societal concomitants of these irregularities and also of other variations in household size.

The regional level data provide some clues regarding one of the probable causes of changes in household size. The fall between 1965 and 1970 can be considered first (Figure 1). The period immediately preceding 1965 was a period of relatively less severe famines. According to Mesfin, the 1962-1965 period was less severely influenced by famine than the four-year period immediately preceding it. On the other hand, the 1966-1969 period, which preceded the 1970 information, was worse off than the two four-year periods immediately

before it.[8] Some further evidence on the relevance of famine in determining the household size emerges from the fact that the only three regions, namely, Gojam, Gonder and Keffa, which registered increases in household size over the 1965-1970 period were the areas which Mesfin designates as the least famine-prone on the basis of his 1958-1977 famine data [11, p. 150]. It is also important to note that the more recent universal sharp decline in the regional household size between 1980 and 1984 was also accompanied by perhaps one of the worst famines in the history of the country.[9]

There is also some evidence that the conditions prevailing between 1965 and 1984 did not have identical effect on the rural and urban areas at the regional level. Whereas the rural areas suffered some marginal decrease in size, the urban areas gained substantially in household size over the same period. One significant consequence of these opposing tendencies was that the rural-urban differences in size became statistically undistinguishable in 1984. It is also tempting to speculate that rural areas with their greater propensity to fall prey to famines than urban areas may have contributed to the doubling-up of households in urban areas by sending some of the rural population to urban areas where generally the existing housing already falls short of expanding urban population. At least the dramatic growth of household size in Addis Ababa, the largest city, does not preclude that possibility. It is also plausible that the tenacity of ethnic ties and obligations may require the urban dwellers to accommodate the poor famine victim from the countryside who happens to be member of the same clan. Such obligations are indeed quite common in traditional settings. This phenomenon of the doubled-up households operates with greater intensity in larger urban centres than in smaller ones. The foregoing of course does not imply that famine is the only cause of the rural-urban migration,because

a number of other factors such as rural-urban differentials in access to income, communications, health and educational services, security, and the like attract migrants from rural to urban areas.

Famine, indeed, operates on the household size in the rural areas both directly and indirectly. Mortality increase due to famine reduces the household size. The family and domestic unit dislocation and disruption endegendered by the departure of some members in search of food and work also leads to household size reduction. Such dislocation may, in the short run, also reduce fertility by postponment of marriage and by reduction in the exposure to conception, which have the joint effect of depressing the household size.[10] It is also striking to note that once some relative relief from famine is in sight, the household appears to revert to somewhat higher size with amazing swiftness.

To sum up, it appears that the processes of modernization, industrialization and urbanization which parallel the changes in the household size elsewhere have at least one added dimension in Ethiopia, namely, famine on which longitudinal data are available. It is plausible that mortality reduction brought about by other factors in the rural areas is counterbalanced, to some extent, by mortality-inducing effect of famine. In contrast to the rural areas, the urban areas which are less famine-prone have experienced quite substantial increases in household size. It appears that mortality decline, rural-urban migration, urban housing pressure, and movement to urban areas induced by traditional ethnic obligations leading to double-up households, reinforce each other to make the urban household size grow at a fairly fast pace.

Before concluding, it is also important to note that from the limited set of tabulations available for 1984, it appears that regions, Awrajas and residence type all have some explanatory power for the variations in household size in Ethiopia. When additional tabulations by other variables are made public by the official sources, it might be worthwhile to extend the list of expalanatory variables by including new variables.

NOTES

1. Usually, household consists of one or more related or unrelated persons who share a housing unit and also make common provisions for essential needs such as food. The family, on the other hand, is conceived as a group of persons living in a household who are related through blood, adoption or marriage [15, p. 6].

2. The choice of 1965, 1970 and 1980 as reference dates in this paper is a matter of convenience as these dates do not represent mid-point of the surveys. Since size of household does not change substantially over very short period of time, this choice is not going to be unduly unrealistic.

3. In the analysis presented here, whenever the published data related to only those areas which were covered by the survey it was assumed that the other areas had same characteristics as those which were covered by the survey.

4. This procedure has led to the exclusion of Eritrea, Tigray, Addis Ababa city, Asseb Administration area and a few other Awrajas in other regions. (An Awraja ranks below a Region in the administrative hierarchy.) The data for the 75 Awrajas are available from: Office of the Population and Housing Census, Central Statistical Office, *Ethiopia 1984 Population and Housing Census: Preliminary Report.* Addis Ababa (1984) pp. 68-71. The averages were computed as unweighted averages of the country in 1984. The later

parts of this paper would show that the type of residence (i.e, rural-urban dichotomy) is one of the most important variables in determining household size and hence it was decided that only 75 Awrajas for which rural and urban data were available separately be included in the analysis.

5. Exclusion of Addis Ababa while computing averages is justified because longitudinal data have often excluded Addis Ababa.

6. The official estimates indicate that, as a result of mortality decline, the expectation of life rose from 36 in 1966 to 46 in 1981 [6, p. 24; 9, p. v]. Both estimates are based on data for 12 out of 14 regions. The decline in mortality, however, does not lead to increase in household size over the 1965-1980 period (Table 1).

7. Out of the estimated rate of growth of 5.0 per cent for Addis Ababa, 3.0 per cent was contributed by migration [8, p. 75]. Among other things, pressure on urban housing leads to doubling-up of households.

8. The famine index by Mesfin is based on the number of Awrajas under famine in a given four year period. For the twenty-year period from 1958 to 1977, the index values were: 1958-61 (100), 1962-65 (89.6), 1966-69 (153.4), 1970-73 (189.9), and 1974-77 (277.6) [11, p. 149]. The reader who might not be familiar with the famine problem in Ethiopia would perhaps like to note that Professor Mesfin's study showed that famine with varying severity was there during each year between 1958 and 1977. On the average, 23 per cent Awrajas were under famine during any given year [11, p. 147].

9. Famine data comparable to that of Mesfin are not readily available for the 1978-1984 period. Mesfin's data indicate that the 1970-73 and 1974-77 were periods of worsening famine situation. If the presumed relationship between household size and famine holds, then the famine situation must have improved somewhat a few years before 1980 in order that the size could register an increase over the 1970-1980 period. In other words, some relief from famine must have taken place during the years immediately before 1980. Probably

the end of the Somalia-Ethiopia war was one of the factors in bringing about some relative relief.

10. In order for the mortality reduction of the magnitude noted in note 6 to have only marginal effect on the rural household size between 1965 and 1980, the dislocational factors must play a substantial role. It may be added that unadjusted and adjusted official estimates of the gross reproduction rates for the rural areas for 1965, 1970, 1978, 1979 and 1980, respectively, were: 2.7 (2.8), 2.5 (2.7), 2.5 (3.3), 2.8 (3.2), 3.3 (3.8): (adjusted figures appear in parentheses) [10, p. 98].

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Appendix I. ANALYSIS OF VARIANCE FOR VARIOUS LEVELS OF CLASSIFICATION FOR SELECTED VARIABLES USING AWRAJA LEVEL AVERAGE SIZE OBSERVATIONS[a]

Source	Sum of Squares	Degrees of freedom	Mean Square	F	P
a. Residence Type (2 categories); One Variable Classification					
Rural/urban	1.904	1	1.904	14.52	p<0.001
Within	19.403	148	0.131		
Total	21.307	149			
b. Regional Rural Size; One Variable Classification					
Region	4.003	11	0.364	5.097	p<0.001
Within	4.498	63	0.071		
Total	8.502	74			
c. Regional Urban Size; One Variable Classification					
Region	4.396	11	0.400	3.870	p<0.001
Within	6.505	63	0.103		
Total	10.901	74			
d. Regional Total Size; One Variable Classification					
Region	3.629	11	0.330	5.395	p<0.001
Within	3.853	63	0.061		
Total	7.482	74			

e. Residence Type and Awrajas; Two Variables

Residence Type	1.904	1	1.904	44.787	p<0.001
Awrajas	16.257	74	0.220	5.167	p<0.05
Residual	3.146	74	0.043		
Total	21.307	149			

f. Residence Type and Regions: Two Variables, [150 observations][a]

Residence Type	1.904	1	1.904	? .80	p<0.001
Regions	5.744	11	0.522	5.)8	p<0.001
Interaction	2.656	11	0.241	2.76	0.01<p<0.05
Sub-total	10.303	23			
Within	11.004	126	0.087		
Total	21.307	149			

g. Residence Type and Regions: Two Variables, [108 observations][a]

Residence Type	2.253	1	2.253	26.583	p<0.001
Regions	4.997	10	0.500	5.895	p<0.001
Interaction	1.576	10	0.158	1.859	p>0.05[b]
Sub-total	8.827	21			
Within	7.290	86	0.085		
Total	16.117	107			

Source: Computed from the Awraja level average household size for rural, urban and total from the 1984 Census Preliminary Report [4, pp. 68-71]. Only 75 Awrajas had the requisite information available for them.

[a]Residence categories by 75 Awrajas provide 150 observations. By excluding 3 Awrajas in Arssi Region and Awrajas with towns of 20,000 or more population, only 108 observations are available for analysis. The later exercise was attempted to reduce the size of the interaction term in the analysis of variance.

[b]The inferences drawn from the analysis of variance remain unchanged where interaction sum of aquare is added to the error term.