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RURAL-URBAN DIFFERENCES IN FERTILITY

An International Comparison

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In view of the major shift from rural to urban patterns of living in the process of economic growth, it is of interest to examine the possible differences in fertility between rural and urban populations--particularly for the less developed countries (LDC's). But direct data on birth rates for different population groups in the LDC's are scanty and unreliable; and only the recent censuses (and some sample inquiries) are beginning to yield distributions of rural and urban populations by age and sex. It is these distributions that are the major source for rural-urban fertility differentials, largely through the calculation of the ratios of children below a certain age to the appropriate population base.

This paper is an attempt to summarize the recent data on the topic, largely for the late 1950's and early 1960's. It begins with a summary of the crude fertility ratios in an international cross-section comparison; examines the possible biases in them if they are to be interpreted as indications of rural-urban differences in crude birth rates; and refines the measures by relating children under a certain age not to total population (as in the crude ratios) but to a more appropriate population base. It then summarizes the bearing of these comparisons on our understanding of the interplay between economic growth, urbanization, and the movements of the birth rates and relevant fertility measures.

1. Crude Fertility Ratios

Table 1 provides a summary of the ratios of children under 5 years of age to total population, for rural and urban populations as distinguished in the national sources. The table covers 72 non-Communist countries, and excludes a few for which data are available. Some countries are excluded because they are too small (less than half million in total population); others because they are untypical of the area (e.g. Uruguay, Trinidad and Tobago, and Guyana in the Latin American region, or South Africa in the Subsaharan (region); and still others because they could not be easily handled in the summary (e.g. Albania, and Israel). In establishing the major regions, we tried to preserve the economic character of each, excluding the single less or more developed country, if the region was largely more or less developed.

In taking group averages we treated each country as a unit, regardless of size--so that the averages are unweighted by population. The implicit assumption is that size of country is not relevant to the rural-urban fertility differentials; and that in this regard a small country is as significant as a large one, however important this difference may be in interpreting the fertility ratios for different parts of the world. Obviously, geometric means of ratios would have been more appropriate than the arithmetic; but the minor improvement did not seem to warrant the extra calculations.

Table 1

Proportions of Rural-Urban Population, and Children under 5 per 1,000 of Population, Rural and Urban, Major Regions, Late 1950's and Early 1960's

	Number of Countries	% Rural in total Population	Children under 5 per 1,000			Number of countries with ratio above 1
			Rural	Urban	R/U Col.3/ Col.4	
	(1)	(2)	(3)	(4)	(5)	(6)
1. Subsaharan Africa (ex. SA)	13	84.8	179	174	1.03	7
2. North Africa	5	65.8	184	178	1.03	2.5
3. Middle East	3	55.9	194	186	1.04	2
4. Asia	10	81.5	165	147	1.12	9
5. Latin Am.	17	58.0	182	158	1.15	17
6. LDCs, Europe (non-Comm., inc. Cyprus)	5	59.2	109	101	1.08	4
7. DCs, Europe, non-Comm.	9	38.0	87	79	1.10	8
8. U.S. & Canada	2	30.2	124	116	1.07	2
9. Australia & New Zeland	2	27.0	138.5	103	1.34	2
10. Japan	1	36.5	90	80	1.12	1
11. Eastern Comm. Europe (ex. Albania)	6	59.5	97	81	1.20	6
Area Totals						
12. Africa (ex. South Africa) (lines 1 & 2)	18	79.5	180	175	1.03	9.5
13. Europe (incl. Cyprus, lines 6-7 and 11)	20	49.8	96	85	1.13	18
Non-Communist						
14. LDCs (lines 1-5)	48	70.8	179	164	1.09	37.5
15. DCs (lines 7-10)	14	35.2	100	88	1.14	13

Notes: Unless otherwise indicated, all the underlying data are from the United Nations, Demographic Yearbook, 1970 (New York, 1971), Table 6, pp. 166-407. In a few European countries where a distinction is made between urban and semi-urban, both groups were put under urban.

The countries included in each group with the year to which the data refer are:

Subsaharan Africa: Central African Republic (1959-60); Chad (1963-64); Congo, Dem. Republic (African population, 1955-57); Congo, Peoples Republic (African population, 1960-61); Dahomey, (African population 1961); Gabon (African population, 1960-61); Ghana, (1960); Guinea (African population, 1955); Mali (1960-61); Namibia (1960); Nigeria (1963); Togo (1958-60); Zambia (African population, 1963).

Table 1 continued:

North Africa: Algeria (1966); Libya (1964); Morocco (1960); Tunisia (1966); United Arab Republic (1960).

Middle East: Iraq (1965); Jordan (1961); Syria (1960).

Asia: Cambodia (1962); Ceylon (1963); India (1961) Indonesia (1964-65); Iran (1966); South Korea (1960); Sabah and Sarawak (1960); Nepal (1961); Pakistan (1961); Turkey (1960).

Latin America: Costa Rica (1963); Dominican Republic (1960); El Salvador (1961); Guatemala (1964); Honduras (1961); Jamaica (1960); Mexico (1960); Nicaragua (1963); Panama (1960); Puerto Rico (1960); Brazil (1960); Chile (1960); Colombia (1964); Ecuador (1962); Paraguay (1962); Peru (1961); Venezuela (1961). Uruguay was excluded as not belonging to the LDC group; Trinidad and Tobago and Guyana were excluded as two small countries with very high proportions of rural population and high R/U ratio untypical of the larger countries.

LDCs, Europe: Ireland (1961); Greece (1961); Cyprus (1960); Portugal (1960); Spain (1960).

DCs, Europe: Denmark (1960); Finland (1960); France (1962); Netherlands (1959); Norway (1960); Sweden (1960); Switzerland (1960); England and Wales (1961); Scotland (1961).

Other DCs: United States (1960); Canada (1961); Australia (1961); New Zealand (1961); Japan (1960).

Eastern Communist Europe: Bulgaria (average of 1956 and 1969) Czechoslovakia (1961); Hungary (1963); Poland (1960); Romania (average of 1956 and 1966); Yugoslavia (1961).

The ratios in columns 2-4 were calculated for each country; and then averaged for the group (arithmetic means). The entries in column b show the number of countries with ratios above 1.0, as in column 5.

While the ratios are subject to qualifications when viewed as approximations to rural-urban differences in birth rates, the major findings are of interest. This preliminary summary would guide us in the exploration of the aspects of the measure that are to be critically examined.

(i) The average urban ratios of children under 5 to total population are lower than the rural in all regions, areas, and groups distinguished in Table 1. Interpreted as evidence of lower fertility among urban than among rural populations, the results agree with widely stated observations as to the direction of rural-urban differences in fertility.[1]

(ii) The proportion of surviving children to total population is an approximation to the crude rate of natural increase; and unless we assume that the lower rate for the urban population is compensated by

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[1] In the United Nations, The Determinants and Consequences of Population Trends (New York, 1953), the discussion of rural-urban differences starts with the statement "that urban populations are less fertile than rural is one of the most widely-observed and widely discussed phenomena in the field of fertility" (p. 85). In the Population Bulletin of the United Nations, no. 7-163 (New York, 1965), the statement concerning differential fertility in low-fertility countries indicates that, on the basis of the census of 1950, "the child woman ratios (children 5-9 to women 20-49 years old) are significantly higher in rural than in urban areas of each country represented in the table.." and "where more refined measures are available, they confirm that fertility is at present higher among rural than among urban residents of low-fertility countries (p. 124). The statement concerning urban-rural differentials in high-fertility (i.e. LDCs) is weaker, but uniformly higher fertility is shown for the rural populations of several countries in Asia and Latin America, (pp. 129-134).

much higher survivor rates among the groups aged 5 and over, the rate of natural increase of total urban population is bound to be lower than that of rural population--although, as will be commented upon below, by a moderate margin. If so, rapid urbanization, i.e. marked rises in the share of urban in total population, can be produced only by internal migration--from the countryside to the cities; or, in the case of substantial immigration, by a concentration of the latter in urban areas.[2] But this means that, when the share of urban population in the total rises substantially, large proportions of urban population must be newcomers, newly arrived immigrants--an inference of considerable interest in relation to some aspects of economic growth of which urbanization is such an integral part.[3]

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[2]This, of course, assumes that the rise in the proportion of urban population is not due to reclassification (of previously rural localities as urban); or at least that the latter is a minor element.

[3]Under the simplifying assumptions of a closed population and the same rate of natural increase for urban, rural, and total population, one can derive the relation between the rise in the share of urban population over a period and the proportion in the latter, at the end of the period, of newcomers who in-migrated during the period.

Designate:

$S_{o,1}$ --shares of urban in total population at times 0,1

T_o, T_1 -- total population at times 0,1

r--growth rate (natural increase) of total population

Then:

urban population at time 1 will be $S_1(T_o)$ (1+r), whereas the urban population of time 1 that resulted from the natural increase of urban population at time o is $S_o T_o(1+r)$. The proportion of new arrivals in the urban population at time 1, to this total, is then:

$$\frac{S_1 T_o(1+r) - S_o T_o(1+r)}{S_1 T_o (1+r)} = \frac{S1-S_o}{S_1}$$

(iii) The differences between the rural and urban ratios of children under 5 to total population are, while fairly commonly observed, rather narrow--particularly for the LDCs. For the group as a whole (line 14), the difference is about 9 percent; and while the average would be slightly higher if the major regions were weighted by population, the increase would be slight. How narrow a differential that is can be seen by comparing the ratios of the LDCs and DCs (lines 14 and 15). The rural ratios of the LDCs are much larger than those of the DC's--the former exceeding the latter by 79 percent; and the excess of the urban ratios is even greater, amounting to 86 percent. Since any adjustment for infant and young children's mortality, to shift from crude fertility ratios to crude birth rates, will only augment this striking disparity between the LDCs and DCs, observed separately for their rural and urban populations, the intra-country fertility differentials between rural and urban population, partic-

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Footnote 3 continued:

In other words, the share of newcomers in urban population equals the proportional change in the share of urban population in the total over the preceding time period, the proportion taken to the share at the end of the period. The newcomers component can be quite large when the share of urban population rises rapidly. Thus, in Table 4 below the share of urban population in South Asia increased from 15.9 percent in 1950 to 18.2 percent in 1960. Under the simplified assumption above, the implication is that in 1960 in-migrants accounted for (18.2-15.9)/18.2, or 13 percent of the 1960 urban population of South Asia.

Of course, if the rate of natural increase of urban populations is below that of rural population, a rise in the share of urban in total population implies an even greater proportion of in-migrants than is shown by the equation above.

ularly in the LDCs, must be relatively small--compared with the striking inter-country differentials.

The important implication is that if "rurality" is associated with high fertility and "urbanity" with low fertility, the rural population of the DCs are far more urban than the urban populations of the LDCs; and the urban population of the LDCs are far more rural than even the rural populations of the DCs. In other words, rurality and urbanity have different meanings (or consequences), as far as fertility is implied, in the two groups of countries.

(iv) It also follows that in trying to account for the higher overall ratio of children to population (and implicit fertility) in the LDCs than of the DCs, the proportions of rural-urban population are only a minor explanatory component. By weighting the ratios in lines 14 and 15 by the shares of rural and urban population (column 2), we derive an overall ratio for the LDCs of 174.6 per thousand; for the DCs of 92.2--a spread of 82.4 points. Even if we assumed that population in both sets of countries was only rural, the spread would still be 79 points; and if we assumed that population in both sets of countries was only urban, the spread would still be 76 points. In other words, the internal rural-urban differences account for only about 5 percent of the total spread in the crude fertility ratios between the LDCs and DCs.

~~It follows that~~ If fertility is to decline in the process of modernization and economic growth, it must decline sharply among both rural and urban populations. A shift in the rural-urban proportions, while the intra-rural and intra-urban fertility rates remain unchanged, will have but a minor effect.

(v) Finally, in several countries, particularly in Africa, the children-population ratio is higher for the urban than the rural population. Among these are the Democratic Republic of the Congo, the People's Republic of the Congo, Dahomey, Gabon, Mali, and Zambia in Subsaharan Africa; Algeria, Libya, and the United Arab Republic in North Afirca. The recurrence of this exception suggests that it is not a statistical accident.[4] But further exploration of the African experience must await additional testing and refinement. Here we only note the important exception from a widespread finding. In testing the findings in Table 1, and considering their value as approximations to crude birth rates, we should deal with four problems. First, how meaningful is the distinction between rural and urban population as drawn in the national censuses or samples underlying Table 12? Second, how important is the differential trend problem involved in taking a ratio of a cumulated total, like that of children 0

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[4] For the Democratic Republic of the Congo, the finding results from a sample study for 1955-57. In "The Demography of the Democratic Republic of the Congo," Chapter 6 of The Demography of Tropical Africa, William Brass and others, eds, (Princeton University Press, Princeton, 1968), Anatole Romaniuk concludes: "Although the urban-rural difference in fertility has not been thoroughly examined in this study, it suffices to mention that there is a higher natality among the urban as compared to rural communities. The adjusted birth rate is 44 for rural and 52 for urban areas. This difference is partly attributable to the more favorable age structure of the urban population, partly to a higher proportion of urban married women, particularly in younger age classes." (p. 337).

through 4, to represent annual ratios of incidence of birth and fertility? Third, what is the possibility of errors in reporting, particularly of children, and of differences in errors of reporting between rural and urban populations? Finally, how large is the mortality component needed to shift from ratios of children under 5 to total births for the preceding quinquennium, or the crude birth rate?

Obviously, no final and specific adjustments for all these aspects will be feasible, even with input of time and skill far exceeding those at my disposal. Here, I can only define the problem, illustrate its possible magnitude, and speculate on its effect on the conclusions suggested by Table 1.

2. The Rural-Urban Division

The rationale for distinguishing urban population is that the implied density of residence--a large number of families in a relatively limited area--is associated with distinctive patterns of living of the population and with a distinctive occupational and industrial structure of the active part of that population. Thus the density of urban residence means some special problems, which often involve political and other service agencies; and it is associated with occupations and productive sectors that unlike agriculture or fishing or forestry, do not require extensive land areas. The resulting non-agricultural occupations and production sectors imply different sets of social and economic costs and rewards from children. Hence some significance is assumed to attach to the rural-urban division for fertility differentials.

While the meaning of urbanity as a distinctive pattern of life and a distinctive cast of occupations and production structures is clear, the identification of urban units is far from easy. Two criteria, reflected in the national census data, are prevalent. One is administrative structure, which has meaning because the presence of a "city" administration indicates the existence of problems in the pattern of living that necessitate a special adjustment in the governmental structure. The other is the size of the locality, as measured by total numbers living, with sufficient density, within a limited area. Neither criterion is itself unequivocal. Administrative distinctions can be obsolete, in that they apply to what is no longer an urban locality; or inadequate, in that they respond slowly to the rapid growth of a previously administratively unrecognized community. The size-of-locality criterion requires that the unit be defined, if city boundaries are not administratively fixed. For example, is it justifiable to group a thousand families living fifteen miles away from a thousand other families into one urban locality of two thousand families? Subsidiary criteria--physical proximity of residences, or occupational-production structure of the community--are sometimes employed. Obviously, the basic criteria do not permit firm distinction; and the lower limit of the size of locality treated as urban varies among the countries from a low of 1,000 to a high of 30,000[5].

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[5]For a more detailed discussion see United Nations, Growth of the World's Urban and Rural Population, 1920-2000, (New York, 1969) pp. 7-10.

Although the distinction between rural and urban populations, as drawn in national censuses, is rough and contains elements of incomparability, it reveals for each country the major difference between the more rural, more agricultural and the more urban, more non-agirucultural segments of the population (agriculture defined broadly to include related sectors, such as forestry and fisheries). We can, however, compare the division based on these census criteria, with those that are suggested by other criteria; and refine the concept of locality size by distinguishing within the urban population cities or towns of different size.

In Table 2 we compare the share of rural population in the total, based largely on the census data used in Table 1, with the share of agriculture in the total male labor force, for the year 1960. We used the agricultural share in male labor force primarily because the treatment of female labor, particularly in the agriculture sector, varies widely among countries. For our purposes it would have been better to have the share of agriculture in the male labor force, excluding the very young and unpaid family labor from both numerator and denominator. But the estimates at hand of both the agricultural and total male labor force are fairly inclusive, reaching down to the age of 10.

Columns 1-4 are based on data for individual countries almost identical with those in Table 1 (excluding only one less developed, and one developed country--both because they were parts of larger national totals; and only the latter were covered in the labor force data). The

Table 2

Comparison of Proportions (%) of Rural in Total Population with the Proportions (%) of Agricultural in Total Male Labor Force, Major Regions and Areas

Region	Share of rural in total Population	Share agriculture in total labor force	Number of Cases	Areas	Share of rural in total Population	Share of rural in total labor force
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Subsaharan Africa (13)	84.8	76.8	10	Africa	82	78.8
2. North Afr. (5)	65.8	62.3	4			
3. Middle East (3)	55.9	50.8	2	South Asia	82	71.0
4. Asia (9)	81.2	70.3	9			
5. Latin America (17)	58.0	60.2	14	Latin America (ex. Argentina)	54	57.2
6. LDCs, Europe (5)	59.2	44.4	4			
7. DCs, Europe (8)	39.2	20.0	8	Europe	42	26.8
8. US and Canada (2)	30.2	12.5	2	North America	30	9.4
9. Austr. and NZ (2)	27.0	14.7	1			
10. Japan (1)	36.5	35.7	1	Oceania	30	27.1
11. East Com. Europe (6)	59.5	42.7	6			
12. LDCs (47)	70.5	66.4	28			
13. DCs (13)	35.7	17.7	12			

Note: The entries in parentheses in column 1 indicates the number of countries to which the averages in columns 2 and 3 refer. Columns 1 and 2: From data underlying Table 1. Sabah and Sarawak were omitted (from Asia) because labor force data were not available; and England and Wales was combined with Scotland (in line 7) for comparability with labor ~~free~~ force data.

Column 3: The underlying data are the share in 1960, of agriculture (and related industries) in total male labor force. The entries are unweighted arithmetic means of the shares for individual countries. For the countries covered see the notes to Table 1 and the note above.

The labor force data are from the International Labour Office, Labour Force Projections, 1965-1985. (Geneva, 1971), Parts I-IV. Table 3 in each Part shows the distribution of the male labor force among three sectors, one of which is agriculture (including related industries such as fisheries, hunting and forestry).

Columns 5-6: The underlying data are from United Nations, Growth of the World's Urban and Rural Population, 1920-2000 (New York, 1969), Table 1, p. 12, except that the figures for Argentina (from ibid, Table 44, pp. 104-105) are substracted from the totals for Latin America. It should be noted that these areas are continents; and Africa therefore includes South Africa among others and Oceania and North America include, in addition to Australia and New Zealand and United States and Canada all other territories. East Asia, (dominated by Mainland China) is excluded from South Asia. The percentages shown are implicitly weighted by population.

Column 7: The underlying data are from the IL source cited for Column 3.

conclusions are obvious.

(a) For the LDCs, the average shares of rural in total population and of agriculture in total male labor force are fairly close. Thus for the 47 LDCs, the averages are 70 and 66 percent respectively.

(b) The two sets of shares tend to differ among the several less developed regions in the same way--with the Latin American and the Middle Eastern region showing the smallest shares of both.

(c) By contrast, in the DCs the shares of rural population are far larger than the shares of agriculture in the male labor force. For the DCs, the average shares are 36 and 18 percent respectively. This difference is due to the development of suburbs and urban activities in non-urban localities--a trend that has led to the distinction in a country like the United States between rural-farm and rural-nonfarm, with the latter dominating the rural division in recent years.

The comparison in columns 5-7 is for continents, and the average measures are, implicitly, weighted by population. The results are similar to those shown in columns 1-4: the two sets of percentages for the less developed areas are fairly close and the share of rural in total population ismuch larger than the share of agriculture in male labor force in the developed areas--particularly striking for North America.

One should note that not all the male labor force engaged in agriculture resides in rural localities: in some countries, and among the smaller cities, a substantial part of the urban population (as defined in the census) may follow agricultural or related pursuits. But

even if we assume that all male labor force in agriculture does reside in rural areas, and that the rural and urban ratios of total population to male labor force are not too different, some of the rural population in Africa, and particularly in Asia, must be engaged in non-agricultural pursuits. In that sense there is not so much difference between these less developed and the developed areas--except that in the latter the non-agricultural components in rural population must be relatively much greater. On the assumption stated above, the non-agricultural component is about one-eighth of rural population in South Asia, about four-tenths in Europe and two-thirds in North America.

One suggestive inference follows: the rural-urban differentials in fertility may understate the agricultural-nonagricultural differentials, i.e. those that would be shown if population were divided between agriculture (and related industries) and the non-agriculture sectors. For the DCs, the difference would largely reflect the admixture of non-agricultural groups within the rural populations. For the LDCs it must reflect an admixture of agricultural population in the small towns and cities classified as urban; and if so, the admixture of non-agricultural population among the rural would be greater than suggested by the comparison of columns 2 and 3 or 6 and 7, of Table 2.[6]

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[6]The United Nations report, The Determinants and Consequences of Population Trends (New York, 1953) observes: "It has been pointed out that comparisons between the fertility of persons employed in agricultural and non-agricultural occupations often show larger differences than comparisons between residents of town and country (pp. 85-86). But then it goes on to attribute this largely to the developed countries. "One explanation is that in several highly urbanized countries today, a large proportion of the persons classified as living in the country are inhabitants of city suburbs rather than of areas which are rural in character." (p. 86).

Admitting that the lines of division between rural and urban population in the census data blur the agricultural distinction, we must recognize, however, that rural is far more agricultural than urban and urban far more non-agricultural than rural. And the differences between the rural and urban occupational and production structures should be enough to permit the associated fertility differentials to emerge. Nor should we exaggerate the magnitude of the blurring, at least as far as the rural division of the DCs is concerned (in which the disparity between the share of rural in total population and the share of agriculture in male labor force is prominent). In the United States, for which this disparity is among the widest, the number of children under 5 years of age per 1,000 women 20-44 was, in 1950, 766 for rural farm and 717 for rural nonfarm--a difference of only about 7 percent;[7] and the spread would probably not be much wider (relatively) for the ratio to total population.

The limited spread in the gross fertility rates between rural and urban populations may well be due partly to the blurring of the agricultural--nonagricultural division. This hypothesis is supported by the findings for Latin America. Its rural-urban ratios of children under 5 to total population are high (see Table 1, line 5) and its rural-population and agricultural-labor ratios are close to each other, with the former slightly lower than the latter (see line 5, columns 2-3, and the corresponding lines for columns 6-7). But we can only note this observation at the present juncture--for various other factors

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[7] See Wilson H. Grabill, Clyde V. Kiser, and Pascal K. Whelpton, The Fertility of American Women, (New York, 1958), Table 32, p. 89.

may explain the wider amplitude of the rural-urban differentials in Latin America than, say, in Africa, shown in Table 1.

The other relevant aspect of the rural-urban division is the distribution of the urban population among communities of different size. This question does not arise with respect to rural population, whose density is assumed to be relatively low throughout. But urban population can reside in small cities of 20 thousand population or in multi-million metropolitan agglomerations. Fertility has been found to vary with the size of city, as selected data from sources cited in Table 3 clearly indicate. Hence, we ought to inquire whether urban populations in the various major regions differ significantly in the degree of concentration in large agglomerations or in the degree of dispersion among urban localities of relatively moderate size.

Table 3 provides a rough answer to this question, in terms of the distribution in 1960 for large continental areas. We accept the rural-urban division given in the census data; and use the estimates of urban population for localities of 20,000 or more to derive the urban population in localities below the 20 thousand limit.

For lines 7-10 of the Table we use some illustrative assumptions concerning fertility differentials associated with urban localities of different size and relate them to fertility of rural population as base. These assumptions are a substitute for specific knowledge of the fertility or birth rates, for the various countries for population distributed

Table 3

Index of Concentration of Urban Population, Major Areas, 1960

	Africa (1)	South Asia (2)	Latin America (ex. Arg.) (3)	Europe (4)	North America (5)	Oceania (6)
1. Urban as percent of total population	18	18	46	58	70	64
Share in Total Urban Population of Population Living in Urban Localities of Differing Size (%)						
2. Localities of less than 20,000	20.4	24.6	34.1	24.0	16.8	17.0
3. Localities with popul. 20 to 100 thousand	25.8	27.6	21.3	25.4	11.1	15.0
4. Localit. with popul. 100 thousand to 0.5 million.	25.6	20.6	14.0	17.7	19.7	16.0
5. Localities with population 0.5 to 2.5 million	21.6	19.1	14.9	24.0	25.8	52.0
6. Localities with population 2.5 million and over	6.6	8.1	15.7	8.9	36.6	0
Assumed Indexes of Relative Fertility for Urban Population (Fertility for Rural Population = 100)						
Assumption 1						
7. Index	86.6	87.1	87.2	86.6	81.3	84.9
8. R/U ratio (derived from line 7)	1.15	1.15	1.15	1.15	1.23	1.18
9. Index	84.9	85.3	84.8	84.5	76.3	82.3
10. R/U ratio (derived from line 9)	1.18	1.17	1.18	1.18	1.31	1.22

Line 1: The complements to 100 of the shares of rural population shown in Table 2, column 6. They represent the shares of urban population as set in the national censuses.

Line 2-b: From United Nations, Growth of the World's Urban and Rural Population, 1920-2000 (New York, 1969) we derived the absolute totals of population in localities of 20 thousand and over, by size of locality classes (Table 13, p. 32, with Argentine excluded from Latin America, on the basis of data in Table 42, 43, 44, and 46. pp. 100-105, and 107-13). Having the absolute total urban population for the same areas (from the same source and used for Table 2, column 5, we subtracted the total of population living in urban localities of 20,000 and over, to derive the absolute data underlying line 2. The absolutes were then expressed as percentages of total urban population (Census definition).

Line 7-9: The relative fertility indexes assumed for the different size of urban localities groups were: in Assumption 1--95, 90, 85, 80, and 75--for groups of increasing size; in Assumption 2--95, 90, 85, 75, and 65. The indexes in lines 7 and 9 are derived by multiplying the percentage shares by the indexes just cited, and dividing the sum by 100. The assumed indexes are illustrative, but were suggested by data on child-women ratios by size of city in India for 1931 and 1941 (in Kingsley Davis, The Population of India and Pakistan, Princeton University Press (Princeton, 1951), Table 20, p. 71, in Japan for 1930 (in Irene B. Taeuber, The Population of Japan, Princeton University Press (Princeton, 1958), Table 98, p. 248),

Table 3 continued:

and in the United States for 1957 (in Clyde V. Kiser, "Differential Fertility in the United States", Chart 13, p. 105, for 1957, in Demographic and Economic Change in Developed Countries, Princeton University Press for NBER (Princeton, 1960).

Lines 8 and 10: Derived from lines 7 and 9, dividing 100 by the entry in lines 7 and 9.

among urban localities of different size. For lack of such specific data, we use some broad, hopefully realistic, assumptions concerning the association between fertility rates and urban locality size, and apply these assumptions uniformly to all the regions, we can then see whether the distribution of urban population by locality-size contributes to the explanation of the findings on the rural-urban differentials in Table 1.

Assumption 2 assigns a more sharply depressing effect than assumption 1 on relative fertility, to the very large urban agglomerations, i.e. the two groups above the 0.5 million mark; but both assumptions yield roughly similar results.

In general, the indexes of concentration of urban population contribute little to the explanation of inter-area differences in the rural-urban fertility ratios. According to Table 3, these ratios should not have differed significantly among the three less developed areas (Africa, South Asia, and Latin America), or between the latter and Europe. But Table 1 shows rural-urban ratios that are appreciably lower for Africa than for either Asia or Latin America, or Europe. Again, according to Table 3, the widest difference in rural-urban fertility should have been shown for North America, but in Table 1 the difference for that area is narrower than that for Europe--and is among the lowest for developed regions. Only in the case of Oceania is there some agreement between the urban concentration indexes in Table 3 and the R/U ratios in Table 1.

Many more variant assumptions could have been used in Table 3, and some might have altered the findings just noted. This would hardly contribute to our knowledge; nor is it necessarily realistic to assume that the function connecting city-size and differential fertility (in relation to that of the non-urban population) has similar parameters in countries at different stages of economic development or with different structures of society and family. In absence of specific data, we can only infer from Table 3 that differences in the distribution of urban population by size of urban localities contribute little to the differences observed among the major regions in the magnitude of their rural-urban fertility differentials. These findings may be revised by more specific data, but Table 3 suggests that a more detailed classification of urban population by size of urban communities ~~would~~ is not likely to contribute much to the explanation of international differences in rural-urban fertility ratio ~~is low~~.

3. The Differential Trends Problem

The number of children under 5 and total population, urban and rural, underlying the ratio summarized in Table 1, show fairly marked trends. This is especially true of urban and ~~total~~ rural population. In the period immediately preceding 1960, and for practically all the major regions, urban population rose at much higher ratio than rural population. Table 4 summarizes the data and the magnitudes of the relevant trends and of the differences between the rural and urban growth rates within each major area.

Disregarding for the moment possible trends in the numerator, i.e. the number of children under 5, and considering only the denominator, one

Table 4

Growth Rates of Rural and Urban Populations
from 1950 to 1960, Major Regions
(absolute totals in millions)

	Absolute Totals				Growth Rate per Year		Adjustment Factor in R/U Ratio
	Rural		Urban				
	1950 (1)	1960 (2)	1950 (3)	1960 (4)	Rural population (5)	Urban population (6)	(7)
1. Africa	190	223	32	50	1.6	4.6	0.931
2. South Asia	586	702	111	156	1.8	3.5	0.961
3. Latin Am.	96	109	66	103	1.3	4.6	0.924
4. Lines 1-3	872	1,034	209	309	1.7	4.0	0.946
5. Europe	185	178	207	247	-0.4	1.8	0.948
6. North Am.	60	60	106	139	0	2.7	0.935
7. Oceania	6	6	7	10	0	3.6	0.915
8. Lines 5-7	251	244	320	396	-0.3	2.2	0.941
9. LDCs (as defined in the source)	1,391	1,605	267	409	1.4	4.4	0.932
10. DCs	420	394	438	583	-0.6	2.9	0.916

Notes: The underlying data from United Nations, Growth of the World's Urban and Rural Population, 1920-2000 (New York, 1969), Table 1, p. 12.

Lines 9-10: Less developed regions were defined to include East Asia without Japan, South Asia, Latin America without Temperate South America (Argentina, Uruguay, Paraguay, Chile), Africa, and Oceania without Australia and New Zealand. The developed group includes Europe, North America, The Soviet Union, Japan, Temperate South America, Australia and New Zealand.

Rural and urban populations are distinguished as in the national censuses.

Column 7: The growth rates in columns 5 and 6 are applied backward to a two-and-a half year period preceding 1960,--yielding, under 5 in 1960. Each entry here, the inverse of the ratio of these bases, is the factor by which the R/U ratio in Table 1 is to be multiplied, to allow for the differential trend adjustment for the total population base, and disregards any adjustment in the number of children.

would argue that the ratio should be calculated not to the population in 1960 (i.e. at the end of the period over which the number of children under 5 is cumulated) but to the middle of the quinquennium represented by the 0-4 age span (i.e. population around the middle of 1957 or 1958). The 1960 population contains sizeable components that were added more recently, and cannot therefore be assumed to have contributed to the production of 4--or 3--year old children. If then we relate the number of children under 5 in 1960 to the smaller population of two and a half years before, the ratios shown in Table 1 would all be raised. The important point is that the urban ratios would be raised appreciably more than the rural, because the growth rate of the base population (the denominator) is so much higher.

Since the adjustment would raise the children-population ratio more for the urban than for the rural population, the R/U ratios shown in column 5 of Table 1 would be reduced. Column 7 of Table 4 shows the proportional reduction, derived from columns 5 and 6 of Table 4. The reduction range from 4 to 8.5 percent--and their application to the R/U ratios in Table 1 would practically cancel the differentials between the rural and urban ratios, when the R/U's are only slightly above 1 (as they are for Africa and the Middle East); and reduce the R/U ratio for LDCs as a whole to only slightly above 1.0.

But the above procedure implies that the higher rate of growth of total urban population, due, as suggested above, largely to internal migration (or migration from abroad with urban areas as destination), is

not accompanied by migration of children below the age of 5. If children less than 5 do migrate from rural to urban areas, the calculation of the children-population ratio as a gross fertility index should allow not only for the in-migration component of the denominator but also for the in-migration component of the numerator. Just as the former has to be excluded (and is in Table 4 by shifting the population base gain two and a half years), so should the in-migration to urban population of children 0 to 4 be excluded. Our adjustment factor in column 7 of Table 4 implies that the population that migrated toward the urban areas, producing a higher upward trend in the growth of urban population, included no children who were less than 5 in 1960 (or the end of the period).

How plausible is this assumption? One might argue that migratory moves from the countryside to urban localities would be impeded by the presence of infants or tiny children; and that, despite the well-known higher migration propensity of younger people and couples, only those without infants or with children over 5 would be moving. But, as will be suggested below, this conjecture is probably wrong. We need here, as elsewhere, detailed data on rural-urban migration, by age of migrant, particularly ages below 5.

Data for the United States, easily at hand, indicate clearly that "children of preschool age and persons from 18 to 34 years old are the only members of the population who have higher mobility rates than the average of all ages combined. These relatively mobile age groups include both unattached youths and young married couples and their children. Leaving

the parental home to take a job or to get married and moving to adjust to the needs of a growing family seem to be key factors in these relatively high mobility rates. Both long-distance and short-distance mobility are affected." Thus for the decade preceding 1957-58, the average annual mobility rate for long distance movements (intercountry or interstate), i.e. the proportion of persons who moved over the preceding year, was 9.2 percent for children 1 through 4, compared with a ratio of 6.4 percent for total population. The high mobility groups among older persons were males and females in ages from 18 to 34. The percentage rates for females 20-34 particularly important for our purposes were: 20-24--14.0 percent; 25-29--10.7 percent; and 30-34--7.2 percent.[8] Similar results are shown for a migration period from 1955 to 1960, yielding migration rates only for the 5-9 age group among children. The rate of non-local movement was also distinctly higher for the 5-9 group than for total population and matched the high rates for the 20-24, 25-29, and 30-34 groups among both males and females.[9]

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[8]The quotation and data are from Henry S. Shryock Jr., Population Mobility within the United States, Community and Family Study Center, (University of Chicago, Chicago, 1964), pp. 351-52, and Table 11.10, p. 354.

[9]See Irene B. Taeuber and Conrad Taeuber, People of the United States in the 20th. Century, A Census Monograph, US Government Printing Office, Washington, D.C., 1971), Table XIV-5, p. 840.

It may be that in the United States, and perhaps in other developed countries, mobility of couples with children below 5 is higher than in the LDCs, particularly if in the latter the children may remain, at least temporarily, with the extended family in the countryside. To show the quantitative results of an assumption that is at the opposite end of that implied in Table 4, we now assume that the mobility of children under 5 is high as is their parents--and that the migration component among children under 5 in the urban areas can be approximated by comparing the proportions of women aged 20-34 in the urban and rural areas. A higher proportion of women aged 20-34 in urban population than in rural population would suggest a much higher mobility of women of those ages; and this assumption would imply a high mobility for children under 5. In Table 5 we assume that the proportional component of in-migrating children under 5 to all children under 5--to be used as an adjustment to the children under 5 ratios in rural and urban areas--is approximated by the ratio of the proportions of women 20-34 among urban population to the proportions of women 20-34 among the rural population. A far more appropriate base would be provided by migration data or even the growth rates over the period of women aged 20-34 in the urban and rural areas. But even the latter data are not available except for a few developed countries; and are particularly scarce among the LDCs.

Table 5 reveals that the adjustment factor for the in-migration component of children under 5 in urban areas is rather moderate for Africa and Asia, and far more substantial for Latin America and the more developed areas (except Oceania). This difference is due to the very minor differences

Table 5

Proportions of Women, Aged 20-34, in Population, Rural and Urban, Derived In-Migration Component of Children 0-4 in Urban Population, and Adjustment Factors to be Applied to the R/U Ratios in Table 1, Major Regions, Late 1950's and Early 1960's

	Number of Countries (1)	Proportions, Women 20-34 (%) Rural (2)	Urban (3)	Ratio Col. 3/ Col. 2 (4)	Number of countries with ratio above 1 (5)	Adjustm. Factor (6)	R/U (7)	R/U Adjusted (8)
1. Subsahar. Africa	12	13.5	14.6	1.08	11	(1.0)	1.03	1.04
2. North Africa	5	10.8	11.2	1.04	5	(0.97)	1.03	1.00
3. Middle East	3	10.2	10.4	1.02	2	(0.95)	1.04	0.99
4. South Asia	10	11.4	11.5-	1.01	4	0.97	1.12	1.09
5. Latin America	17	10.0	12.2	1.22	17	11.33	1.15	1.30
6. LDCs, Europe	5	10.4	12.6	1.21	5	(1.15)	1.08	1.24
7. DCs, Europe	9	8.6	10.4	1.2	9	(1.15)	1.10	1.27
8. North America	2	8.3	10.4	1.25	2	1.17	1.07	1.25
9. Oceania	2	9.2	9.4	1.02	1	0.93	1.34	1.25
10. Japan	1	11.4	13.8	1.21	1	1.16	1.12	1.30
11. Comm. East. Europe	6	10.8	12.7	1.18	6	(1.12)	1.20	1.36
12. Africa	17	12.7	13.6	1.07	16	11.00	1.03	1.03
13. Europe	20	9.7	11.6	1.20	20	11.14	1.13	1.29
14. LDCs	47	11.26	12.43	1.10	39	1.03	1.09	1.12
15. DCs	14	8.86	10.49	1.18	14	1.08	1.14	1.23

Notes: Columns 1-5: The countries are those listed in the notes to Table 1 excluding Zambia from Subsaharan Africa (because of lack of detailed age breaks); and the source of the data is also given there.

Column 5: Shows the number of countries in which the ratio in col. 4 is above 1.

Column 6: The product of the ratio in column 4 and in Table 4, column 7, since the latter is given only for major continents. We applied the ratio for Africa in Column 7 of Table 4 to the ratios in Table 5 for Subsaharan Africa, North Africa, and the Middle East; the ratio for Europe to the ratios for less developed non-Communist Europe, developed non-Communist Europe, and Communist Eastern Europe; and the ratio for South Asia to the ratio for Japan. Because of the disparity in matching areas, the total adjustment factor in these cases is put in parentheses.

Column 7: From Table 1 column 5, and represent the relatives of the rural gross fertility ratio to the urban.

Column 8: Product of ratios in columns 6 and 7.

between the rural and urban shares of females 20-34 in Africa and South Asia--which suggests that on these continents the greater growth in urban population reflects male, not female, migration. This suggestion will be confirmed below when we deal with the refined fertility ratio differentials between rural and urban population. But since here we associate mbility of children over 5 with the mobility of females (the presumptive mothers) and not with the mobility of males, the adjustment for the migration component in the African and Asian R/U ratios is minor. This means that the rather low R/U ratios for these areas in Table 1, would not be raised; while the appreciably higher R/U ratios for Latin America and most developed areas, in Table 1 would be raised further.

This finding concerning the different role of the sexes in the rural-urban migration in Africa and South Asia, compared with Latin America and most developed areas, is confirmed in the discussion of the urban male-female sex ratio in the United Nations document on urbanization. Commenting upon the high sex ratio in urban Africa and Asia, and the low ratio in the urban populations of developed countries, the document presents the possible reasons (quoted here because of their bearing on conditions of migration of children under 5):

"The reasons for this diversity in the distribution of individuals of either sex between town and countryside are complex. Urban conditions may be responsible. Thus, in most of the less developed areas, where the cities may be lacking in suitable residences for families and there are often few employment opportunities for women, the masculinity

rate is higher in the urban areas than in the rural areas. In the cities of the more developed areas, two factors are perhaps important. One is the more suitable residential accommodations for wives and children of male workers in cities of the more developed areas. The second is the tendency for office and other service employments to attract female workers to the cities of more developed areas. However, rural conditions may be no less determining, such as the needs for cash income and varied opportunities for men or women to earn them locally, and differences in family roles and responsibilities on the part of young rural men or women."[10] All one can add is a question arises as to the conditions in Latin America, that unlike those in Asia and Africa, do induce a much larger migration toward the cities of women than of men.

The combination of the adjustment factors for the migration component among children under 5 in urban communities, with those for the difference in growth rates of total populations, yields net adjustment factors for the R/U ratios of Table 1. These, shown in column 6, are applied to the R/U ratios in column 7 to derive the adjusted R/U ratios in column 8. The net adjustment factors accentuate the contrast between the rather low rural-urban differentials in Africa and South Asia, and the fairly sizable differentials in Latin America and in the DCs already suggested in Table 1. But even the latter, which range in Column 8 around 1.2 to 1.3, are still rather small compared with the international differentials, i.e. those within the rural and urban populations among the less and more developed countries.

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[10] See United Nations, Growth of the World's Population (New York, 1969) p. 15.

4. Errors of Understatement

Needless to say, the data on number of children under 5, as well as total population, rural and urban, are subject to error; as are all further breakdowns of rural or urban population by sex and age, to be used below. Social and economic data, particularly in the LDCs, are prone to error. The specific bodies of data need to be examined critically and tested whenever possible. Consequently, particularly in the case of international comparisons involving a variety of LDCs, findings cannot be much more than suggestive, especially if differences are minor.

The point warrants specific mention here, because the number of children under 5 is commonly understated, usually because of failure to report infants. For the United States, the census enumeration of children 0-4 has been checked by applying to the census total of children 10-14 years of age a decade later a reverse survival rate based on relevant life tables. This check reveals that for the censuses since 1880 (omitting 1870, as distorted by the aftermath of the Civil War) the understatement for white children ranged about 5 percent, and that for Negro children from 12 to 13 percent.[11] This does not bear directly on the rural-urban difference in

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[11] The estimates were prepared by Dr. Everett S. Lee for the University of Philadelphia Study (see Population Redistribution and Economic Growth, United States, 1870-1960, vol. I, by Lee and others, American Philosophical Society, Memoir no. 75 (Philadelphia, 1967). They are quoted in Bernard Okun, Trends in Birth Rates in the United States since 1870. The Johns Hopkins University Studies in Historical and Political Science, Series LXXXVI, no. 1, 1958, Table I-1, p. 24 (for white children), and Table II-1, p. 103, for Negro children).

understatements for children under 5. However, given the greater rurality of Negroes, the difference above in the extent of underenumeration does suggest a greater relative understatement of children under 5 among rural than among urban populations. It can easily be demonstrated that the more urbanized, more developed countries would show a relatively smaller understatement of children under 5 than the more rural, less developed countries; and this means that the comparisons in Table 1 and others understate the wide difference in fertility rates between the LDCs and DCs. But we need to know the differential between the understatement within the urban and rural populations of a given country, developed or less developed, and particularly of the less developed.

Warren C. Robinson has argued in several papers that the non-Western countries have not shown the lower urban than rural fertility rate that has been observed so widely among the Western countries. Having examined the data critically, he concludes, in the specific case of India that there is no basis for assuming that enumerative errors, and particularly net underenumeration, have been "concentrated in rural or urban areas."[12] One could argue that in general, censuses are probably more accurate for cities and urban localities than for the countryside--but this is not necessarily true for cities with large slums populated by recent in-migrants, compared to a countryside well covered by local reporters.

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[12] See his "Urban-Rural Differences in Indian Fertility", Population Studies, Vol. XIV, no. 3, March 1961, p. 222.

In its Population Bulletin no. 7-1963, (New York, 1965), dealing largely with worldwide conditions and trends of fertility, the United Nations uses the ratio of children 5-9 years old (to a base comprising women of reproductive ages, 20-49). "By relating the number of children aged 5-9 to women 20-49 years of age instead of using a ratio that involves the age group under 5 years, distortion due to differential under-enumeration of infants and very young children is avoided."[13] Although this shift magnifies the problems of adjustment for differential trend bias, and the mortality component, we followed the example and calculated the ratios of children 0-4 shown in Table 1 (Table 6).

For a country as a whole and a closed population the number of children 5-9 years old will differ from the number 0-4, for several reasons. (a) All other conditions being equal, an allowance for mortality over the added years would mean fewer children 5-9 than those 0-4 in the preceding quinquennium. (b) If the base population grows, the number of children born in one quinquennium should be smaller than the number born in the following quinquennium--again making for fewer children 5-9 than 0-4 years of age. (c) Since underenumeration is assumed to be much greater proportionately for children 0-4 than for those 5-9, all other conditions being equal, the number of older children should be larger than that of the younger group. (d) A change in the birth rate from the earlier to the later

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[13] See the report, footnote 8, p. 124.

Table 6

Children, 5-9, per 1,000 of Population, Rural and Urban, Major Regions, Late 1950's and Early 1960's
(compared with ratios for children 0-4)

	RURAL			URBAN			R/U Ratios		
	5 to 9 per 1,000 (1)	Relative to 0-4 (2)	No. of countries as in 2 (3)	5 to 9 per 1,000 (4)	Relative to 0-4 (5)	No. of countries as in 5 (6)	Children 5-9 Col.1/ Col.4 (7)	Relation to 0-4 ratio Col. 2/ Col. 5 (8)	No. of Countries as in 8 (9)
1. Subsaharan Africa (13)	151	0.84	13	139	0.80	13	1.09	1.05	8
2. North Africa (5)	154	0.84	5	146	0.82	5	1.05	1.02	3
3. Middle East (3)	157	0.81	3	146	0.78	3	1.08	1.04	2
4. South Asia (10)	157	0.95	6	141	0.96	6	1.11	0.99	5.5
5. Latin America (17)	163	0.90	17	139	0.88	17	1.17	1.02	10
6. LDCs, Europe (5)	105	0.96	4	88	0.87	5	1.19	1.10	5
7. DCs, Europe (9)	90	1.03	4	77	0.97	7	1.17	1.06	8
8. US & Canada (2)	120.5	0.97	2	103.5	0.89	2	1.16	1.09	2
9. Austr. & New Zaaland (2)	124.5	0.90	2	96	0.93	2	1.30	0.97	2
10. Japan	114	1.27	1	89	1.11	1	1.28	1.14	1
11. Comm. East Europe (6)	104	1.07	5.5	90	1.11	4	1.16	0.96	4
Major Continents									
12. Africa (18)	152	0.84	18	141	0.81	18	1.07	1.04	10.5
13. Europe (20)	98	1.02	10.5	84	0.99	14	1.17	1.03	15
14. LDCs	157	0.88	44	141	0.86	44	1.11	1.02	27
15. DCs	101	1.01	5	84	0.95	11	1.20	1.05	11

Notes: For the countries included and the basic source for columns 1, 4, and 7, see thenote to Table 1.

Columns 1, 4: Arithmetic means of ratios calculated separately for each country.

Columns 2, 5, 7 and 8: Ratios of the averages in columns 1, and 4, of those in columns 2 and 5 and those in Table 1, columns 3, and 4.

Columns 3, 6, and 9: Number of countries for which the relative is either below or above 1--as shown in Columns 2, 5, and 8. Equality is counted as a half country.

quinquennium may either raise or lower the number of children 5-9, relative to the younger group.

Each of these factors--mortality, trend of the base, under-enumeration, and birth rate--may have differential effects on rural and urban children 5-9 compared with children 0-4. In addition we have a fifth factor--the rate of internal migration, which may be different during the later quinquennium from that for the whole decade over which children 5-9 could have moved since their birth. Perhaps the only reasonable assumption concerning the differential effects is that the trend base adjustment, relating in the case of children 5-9 to a seven and a half year period rather than the two and a half year period used for children 0-4, is appreciably larger for urban children 5-9 compared with rural children 5-9 than it is for rural-urban differentials for children 0-4. In that case the unadjusted ratios of children 5-9 to population should be lower than those for children 0-4 for the urban comparison than for the rural comparison.

With these brief comments on the possible sources of disparity between children 5-9 and children 0-4 within a closed population for a country as a whole, and the differential impact of the trend in the base, on the rural and urban differences between the two groups of children, we can now examine Table 6.

(i) For most regions, the ratios to population of children 5-9 are distinctly lower than the ratios of children 0-4 in Table 1.

This means that the factors of additional mortality and the use of population at the end of the period as base reduced the number of children 5-9 more than it was raised by lesser underenumeration. And presumably neither the birth rate, if it declined from the earlier to the later quinquennium, nor the migration rate, changed sufficiently to reverse the result.

(ii) But there were some exceptions: in developed Europe (rural population only line 7), Japan (line 10) and Communist East Europe (line 11), the children 5-9 ratios were higher than children 0-4 ratios. Apparently, in these regions the birth rate declined from the earlier to the later quinquennium,--in a way in which it did not for the other regions.

This can be confirmed for the developed countries, Europe and Latin America, for which acceptable crude birth rates for the two quinquennia, 1950-54 and 1955-59 can be secured. The average rates are per 1,000:[14]

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[14] The composition of the groups is that given in Tables 1, except that data were not available for 6 of the 17 Latin American countries included: The Dominican Republic; Jamaica; Nicaragua; Puerto Rico, Brazil, and Paraguay.

The source for all but Latin America is the United Nations, Demographic Yearbook, 1964 (New York, 1965), Table 19, pp. 484 ff. Data for Latin America are from the Collver monograph cited in notes to Table 7, Table 5, pp. 28-30; Table 17 p. 82; and Table 20, p. 90.

	1950-54	1955-59
LDCs, Europe (5)	22.4	22.3
DCs, Europe (9)	18.6	17.9
Comm. Europe (6)	24.8	21.6
US and Canada (2)	26.1	26.2
Australia and New Zealand (2)	24.4	24.4
Japan (1)	23.7	18.2
Latin America (1)	44.6	44.9

The average crude birth rate declined significantly in developed non-Communist Europe, Communist Europe, and Japan--the three regions in Table 6 with higher ratios for children 5-9 than for the 0-4 group (see column 2). The absence of such decline explains the shortfall in the ratios for the older children for the LDCs in Europe, the United States and Canada, Australia and New Zealand; and among the less developed regions, Latin America. No reliable birth rates are available for other less developed regions.

(iii) As might have been expected, the urban ratios of children 5-9 tend to drop somewhat further below those of children 0-4 than the rural (compare columns 2 and 5). But this difference is neither general, nor is it large when it occurs.

(iv) For our purposes the important comparison is of the R/U ratios in columns 7-9. The differences among regions and groups in the R/U ratios for children 5-9 are quite similar to those shown in Table 1.

Here also the R/U ratios for Africa and Asia are rather narrow. They are distinctly wider in Latin America, and in the DCs. For the LDCs and DCs (lines 14 and 15) the R/U ratios in Table 6 are 1.11 and 1.20 respectively--in Table 1 they were 1.09 and 1.14. And as in Table 1, the intra-country rural-urban differentials are much narrower than the inter-country differentials--particularly those for the urban communities.

Thus, in general, if the children 5-9 ratios can be viewed as more reliable indexes of fertility than the children 0-4 ratios, the comparison only confirms the findings for the children 0-4 ratios--the differences being largely explicable in terms of expected differences associated with the mortality and trend-base components and the observed changes over time in the crude birth rates.

5. The Mortality Component

For the analysis of rural urban differences in the rate of natural increase, disregarding the internal migration (or immigration) factor--it is the proportional additions through surviving children rather than fertility and births proper that are relevant. But we are also interested in the rural-urban differences in fertility and mortality, because of the distinctive determinants involved and their different responses to modernization and technological change in the process of economic growth. If, having considered the children 0-4 and 5-9 ratios, we can ascertain the rural-urban differences in mortality, it would be possible to shift from the children-population ratios to the crude birth rates; and, with further refinement in the population base, to standardized birth rates.

Before attempting to establish the relevant mortality rates of children 0-4 for rural and urban populations separately, we do so for countrywide population (Table 7). These rates will serve as a check on the representativeness of our sample of countries--since the crude birth rates so derived can be compared with those estimated for the major regions of the world by the United Nations; but even more relevant, they tell us in advance how important the rural-urban differentials in children's mortality can be in shifting from ratios of children to ratios of births. For if the over-all mortality levels are low, and survival rates high, even substantial relative rural-urban differences in mortality will have little effect on the shift from children to birth ratios.

The calculations in Table 7 are limited to the groups of countries that enter the total for the LDCs and DCs (omitting the less developed countries of Europe and Eastern Communist Europe). For the DC's and Latin America, the data underlying the infant and children under 5 mortality rates are quite adequate; for Africa and Asia we use data from scattered sources, some cited in Table 8, which deals with rural-urban differentials in children's mortality. But even these data suggest the proper order of magnitudes.

The final result appears in column 5, in which the entries represent the ratio of cumulated live births over the 5 years to total population at the end of the five year period. An allowance for the trend bias in the population base, of between 1 and 1.5 percent

Table 7

Approximations to Shift from Children 0-4 Ratios to Crude Birth Rates, Late 1950's and Early 1960's

	Infant Mortality (per 1,000 ive Births) (1)	Ratio to Mortality to age 5 (2)	Survival Ratio to age 5 (3)	Child. 0-4 per 1,000 (4)	Crude Births per 1,000 5 years (5)
1. DCs 1955-59 for col. 1 and 3 (14)	24.5	0.80	0.97	92	95
LDC's					
2. Subsaharan Africa	162	0.60	0.73	178	244
3. North Africa and Middle East	120	0.60	0.80	186	232
4. South Asia	120	0.60	0.80	162	202
5. Latin America 1955-59 for col. 1 and 3 (11)	93	0.60	0.85	172	202
6. All LDC				174	218

Notes: The numbers of countries for which data were used in calculating the averages in column 1 are given in the stubs for lines 1 and 5.

Line 1: The entries in column 1 are averages of infant mortality rates, for each country for 1955-59, from United Nations Demographic Yearbook, 1963, (New York, 1965) Table 22, pp. 522ff. For list of countries covered see notes to Table 1. The ratio in column 2 is from life tables for the United States, which indicate that cumulative death rates to age 5 are barely 10 percent above those to age 1 (see e.g. US Department of Health, Education and Welfare, Public Health Service, Life Tables 1959-61, Vol. 1, no. 3 May 1965. Tables for different races and regions). Also the Collver monograph, cited for line 5 below, shows for 1955-59 an infant mortality of 62 in Argentina, and a cumulative death rate to age 5 of only 71. Column 3 is the survival rate to age 5, i.e., 1000 minus (col. 1: 100)/col. 2. Column 4 (also for lines 2-5) is from Table 1. Column 5 is derived by dividing column 4 by column 3.

Lines 2-4: Column 1 is based on the sources cited in Table 8 (which deals with rural-urban differentials in mortality), and several other. The other main sources are: United Nations, Population Bulletin no. 6, 1962 (with special reference to mortality), New York 1963, Tables III.16, and III.20, pp. 39 and 45; Gwendolyn Z. Johnson "Health Conditions in Rural and Urban Areas of Developing Countries," Population Studies, Vol. XVII March 1964, Table 1, 5A, 5B, pp. 295, 298-99; A. E. Sarhan, "Mortality Trends in the United Arab Republic," Table 1, pp. 359-360, in United Nations, World Population Conference, 1965, vol. II (New York, 1967); and H. Wiesler, "Mortality in South-East Asia, "Tables 1 and 2, p. 285 (in the UN volume cited for the Sarhan paper). The ratio in column 2 is that established for the less developed countries in Latin America (see notes to line 5). For the derivation of columns 3, 4, and 5 see the notes to line 1.

Line 5: Arithmetic means for eleven Latin American countries--used in Table 1, excluding the Dominican Republic, Nicaragua, Puerto Rico, Brazil, and Paraguay. The data are from Andrew Collver, Birth Rates in Latin America: New Estimates of Historical Trends and Fluctuations, Institute of International Studies, University of California, Berkeley, Research Series, no. 7 (Berkeley, 1965), successive tables for individual countries. For the derivation of the rates see Chapter 1, particularly his appendix, pp. 15-24. The source gives both infant mortality rates and survival ratios to age 5.

Table 7 continued:

Line 6: Averages of the entries in lines 2-5 weighted by the number of countries covered in Table 1 (13 for line 2, 8 for line 3, 10 for line 4, and 17 for line 5).

per year growth for the DCs and varying from over 2 to almost 3 percent per year for the regions within the less developed group, would raise the numbers in column 5 by about 3 percent for the DCs and between 5 and 8 percent for the regions within the less developed group. This would yield a crude birth rate per year of about 19½ per 1,000 for the developed countries (i.e. 95/5 multiplied by 1.03), and between 46 and 47 per 1,000 for the less developed regions (i.e. 218/5 multiplied by 1.05 to 1.08, with the rates lowest in South Asia and highest in Subsaharan Africa). The United Nations estimates of the crude birth rates for 1956-60 (e.g. in Demographic Yearbook, 1961, New York, 1962, Table 2, p. 120) are of 19 for Europe and 25 for North America (yielding a weighted average of close to 21), 45 in tropical and southern Africa, 47 to 48 in North Africa and Southwest Asia, 42 in Latin America, and of 41 in South Asia. There is thus general conformity of the crude birth rates derived from our samples to the estimates.

Perhaps more important for our purposes are two conclusions suggested by Table 7. First, since the mortality rates of children under 5 in the developed countries are about 30 per 1,000, and the survival rates, 970 per 1,000, even striking rural-urban differentials in mortality would have little effect on the estimates of rural-urban differences in birth rates derived from children ratios. Thus, even if rural mortality were twice that of the other (or vice versa) the difference in survival ratios would be between, say, 980 and 960, (corresponding to cumulative mortalities of 20 and 40 respectively)--or

barely two percent. Only when children's mortality is high can the difference between rural and urban levels markedly affect the shift from the children-to the birth-rates.

Second, the difference between the LDCs and the DCs is appreciably wider for crude birth rates than for children-ratios. The spread for the latter, between 92 and 174, is 82 points; that between the birth rates in column 5 is from 95 to 218, or 123 points--about 50 percent greater. This means that the intra-country rural-urban differentials in birth rates would have to be wider than the differentials in the child-ratios, in order to contribute even the minor explanatory fraction that was contributed by the latter to the spread between the LDCs and DCs in the ratio of children under 5.

We turn now to the question as to the rural-urban differentials in infant and young children's mortality within a country, and their sign and magnitude--particularly for the LDCs where these differences may affect our comparisons significantly. There is no conclusive answer in the literature. Warren C. Robinson, in the paper cited in footnote 12, presents evidence for 1911 to 1950 of higher infant mortality in the large cities than in the countryside of the three large provinces of India. Madras, Bombay, and Bengal (see his paper, Table 2, p. 22); and in the paper cited in the notes to Table 8 below, he continues to argue for the case of higher urban than rural mortality in the LDC's. On the other hand, Eduardo E. Arriaga (using Mexico to illustrate) argues that mortality is grossly underreported in rural areas of the LDCs

because of the difficulties of access; and that a proper correction for the latter factor would show adjusted mortality rates to be higher in the countryside.[15]

In attempting to arrive at some acceptable conclusion, the following considerations seem important. First, undoubtedly in the past, and perhaps as late as the early twentieth century, children mortality was higher in the cities than in the countryside even in developed countries. This appeared to have been true, at least of the United States, as late as 1910.[16] Second, in the DCs this greater mortality in the cities has been reduced, and in recent decades was not higher, a significant change considering the large in-migrations of rural population. Third, in the LDCs mortality rates have declined rapidly within recent decades--and in the course of such declines, the urban-rural differentials may also have changed rapidly. This means that for our purposes, for 1960 or thereabout, it may be misleading to use unadjusted mortality data, even for the preceding decade. Finally, the available data probably understate mortality for both urban and rural populations. But given the state of roads and communications in the rural areas of the LDCs, and the bias toward recording deaths by place of occurrence rather than by place

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[15] See his "Rural-Urban Mortality in Developing Countries: An Index for Detecting Rural Underregistration, Demography, Vol. IV, no. 1, December 1967, pp. 98-107.

[16] See Irene B. And Conrad Taeuber, People of the United States in the 20th Century (Washington, D.C., 1971), p. 518.

of residence of the deceased (which raises recorded mortality is cities), the chances of a greater understatement in the countryside are rather high.

The mortality data in Table 8 illustrate the general statements and carry them forward. By combining them with some general references, we may be able to come to some acceptable conclusions.

Table 8 is not based on a complete and exhaustive combing of data for individual countries--a task beyond our resources, and one unlikely to yield much firmer results, considering the scarcity and poor quality of many of the data for the LDCs. But it is a summary of data easily available in the United Nations and the journal literature. With the broad conclusions suggested one can derive implications realistic enough to warrant further exploration of the analytical questions that they raise.

In Panel A we have fifteen LDC's for which a comparison can be made between infant mortality for the main city and for the country as a whole in recent years. For Ceylon, the two sources yield conflicting conclusions; for Egypt and Thailand, infant mortality is about the same in the city and in the country as a whole; for nine countries (Costa Rica, Chile, Colombia, Mexico, Panama, Venezuela, Madagascar, Philippines, Malaya), infant mortality is lower in the main city and for three (Algeria, India, and El Salvador, infant mortality in the city is higher. On the balance of this evidence, we should assume a lower mortality in the main city, although the panel is heavily dominated by Latin America.

Table 8

Infant and Young Children's Mortality, Rural and Urban, Less Developed Countries

A. Infant Mortality in Major City and Country

	Country and Period Covered (1)	Major City (2)	Infant Mortality, per 1,000 Country (3)	Major City (4)
1.	Madagascar, registr. system, 1958	Tananarive City	74	63
2.	Egypt, 1950-59	Cairo	166	166
3.	Algeria, 1950-59	Algiers	92	98
4.	Ceylon, 1950-59	Colombo	74	83
4a.	" 1959-60	"	58	50
5.	India, 1950-59	Bombay	110	122
5a.	" (reg.) 1959-60	Bombay, Calcutta, Madras	87	92, 130, 129
6.	Philipp. 1950-59	Manila	100	66
7.	Thailand, 1950-59	Bangkok	62	62
8.	Malay, 1950-59	Singapore	83	58
8a.	" 1959-60	Kuala Lumpur	66	51
9.	Costa Rica, 1959-60	San Jose	89	44
10.	Chile, 1959-60	Santiago, Valparaiso	120	83,88
11.	Colombia, 1950-59	Bogota	110	104
11a.	" 1959-60	"	97	82
12.	El Salvador, 1950-59	San Salvador	80	90
12a.	" 1959-60	"	78	84
13.	Mexico, 1950-59	Mexico City	86	85
14.	Panama, 1959-60	Panama City	58	48
15.	Venezuela, 1959-60	Caracas	55	53

B. Infant (or Total) Mortality, Rural and Urban, Africa

		Rural (1)	Urban (2)	Total (3)
16.	Cent. African Rep. Cent. Oubagui Region, 1959	188	197	190
17.	Guinea, 1954-55	200	215	202
17a.	" mortality to age 5, 1954-55	378	346	378
18.	Senegal, 1957 La Basse Vallee region	152	172	167
19.	Mali, 1957-58	320	246	293

Congo, Democratic Republic, 1955-57 Survey

		Rural (1)	Mixed (2)	Urban (3)	Total (4)
20.	Infant mortality, per 1,000	195	142	106	177
21.	Mortality to age 5, per 1,000	325	238	178	299

Table 8 continued:

Taiwan, 292 Townships and Cities Grouped by Density, 1961 Population per square Mile

		0-299 (1)	300-999 (2)	1,000-2,999 (3)	3,000-9,999 (4)	10,000 and up (5)
22.	Male labor force in agriculture & fishing as % of total	74.4	72.3	64.3	28.5	8.3
23.	Crude death rate per 1,000	8.1	7.3	6.9	6.3	4.5

Thailand, Four Regions, Middle 1960's

		Central (1)	South (2)	North (3)	Northeast (4)
24.	Urban as % of region population	32.3	11.2	6.3	4.0
25.	Stand. death rate	10.3	7.9	12.3	11.6

Bangladesh, Retrospective Study, Two Periods

		1952-56		1957-61	
		Rural (1)	Urban (2)	Rural (3)	Urban (4)
32.	Infant mortality	167	130	150	101

Turkey, 1963 and 1966 Surveys

		Rural (1)	Non-Metropolitan Urban (2)	Metropolitan (3)
33.	Mortality to age of 2, around 1960 (per 1,000)	244	200	128
34.	Infant mortality, around 1966	167	135	114
35.	Expectation of life at birth, around 1966	52.2	57.0	60.3

Notes: Lines 2-4,5,6,7,8,11,12,13: From Warren C. Robinson, "Urbanization and Fertility: the non-Western Experience," Milbank Memorial Fund Quarterly, vol. XLI, no. 3 July 1963, Table 2, p. 300. We omitted several countries excluded from our sample in Table 1 (British Guyana, Argentina, and Uruguay). The ratios shown are infant deaths (below 1 year of age) per 1,000 live births.

Lines 1,4a,5a,8a,9,10,11a,12a,14-19: From the Gwendolyn Johnson paper, and the United Nations, Population Bulletin no. 6 cited in the notes to lines 2-4 of Table 7.

Lines 20-21: From Anatole Romaniuk, "The Demography of the Democratic Republic of the Congo," Chapter 6 of William Brass and others, The Demography of Tropical Africa (Princeton University Press, Princeton, 1968), Table 6.36, p. 311.

Lines 22-23: From Andrew Collver, Alden Speare Jr., and Paul K. C. Liu, "Local Variations of Fertility in Taiwan", Population Studies, Vol. XX, no. 3, March 1967, Table 4, p. 336.

Lines 24-25: From Sidney Goldstein, "Urbanization in Thailand, 1947-1967", Demography, vol. 8, no. 2, May 1971. Table 6, p. 217.

Line 26: From T. Paul Schultz, "Retrospective Evidence of a Decline in Fertility and Child Mortality in Bangladesh," Demography, vol. 9, no. 3, August 1972, p. 419.

Lines 27-29: From Frederic C. Shorter, "Information on Fertility, Mortality, and Population Growth in Turkey," Population Index, Vol. 34, no. 1, Janurary-March 1968, Table 3 p. 11. Mr. Shorter observes that the data centering on 1966 are from a sample that refers "to only 71 percent of the population, which excludes areas containing poor rural mortality; and that "the differentials are probably understated" (p. 11).

This conclusion is strengthened on the reasonable assumption that the data are more complete for the main city. Furthermore, registration of deaths by place of occurrence would inflate the urban mortality ratios.

The conclusions from Panel B are also weighted in favor of assuming lower mortality for the urban than for the rural populations. For the 5 African countries, two, the Central African Republic and Senegal, show a higher urban infant mortality (lines 16 and 18); in Guinea mortality to age 5 is greater in rural than in urban areas (although both are quite high, line 17a); and in the Congo the lower mortality in the mixed and urban areas is marked (in Table 1 mixed and urban were taken to represent urban). For the four Asian countries (for two of which only total mortality is available), lower urban mortality is clearly indicated.

If one attempts to reach some reasonable conclusions concerning differential rural-urban mortality of children under 5 in the LDC's, the consensus reported for Latin America seems clear. "On the whole, it may be said that in the five countries (Argentina, Brazil, Chile, Panama, and Venezuela, SK) for which mortality data have been examined, infant mortality is generally less widespread in the urban than in the total population."[17] A similar conclusion, referring to the recent

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[17] See Philip M. Hauser, ed. Urbanization in Latin America, Columbia University press for UNESCO (New York, 1961), "Demographic Aspects of Urbanization in Latin America," by the Population Branch, Bureau of Social Affairs, United Nations, p. 107.

spread of control over infecticus diseases which reversed the balance in favor of lower mortality in the urban areas, is made in a more recent study.[18]

No such general statement is available for less developed, non-Communist Asia or for Africa. In regard to the former, a United Nations report states that "So far as it is possible to judge by available data, there is apparently no great difference in the rate of natural increase between urban and rural areas in many countries of this region."[19] The implication of this statement, combined with the somewhat lower ratio of children under 5 to population in urban than in rural localities (see Table 1), is that urban mortality is higher than for rural population. But this may be only a casual statement.

A general review in the 1964 Johnson paper of health conditions in rural and urban areas of LDCs indicates better health care in the larger cities, a prevalence of lower mortality in urban than in rural areas in Asia and Latin America (disguised by inadequate mortality reporting in the countryside) and varied results for the few countries in Africa.[20]

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[18] See Glenn H. Beyer, ed., The Urban Explosion in Latin America. (Cornell University Press, Ithaca, 1967)," it may be concluded that mortality is lower in urban environments...", p. 85.

[19] See ECAFE Secretariat, "The Demographic Situation and Prospective Population Trends in Asia and the Far East," in United Nations, The Asian Population Conference, 1963, New York 1964, p. 82.

[20] See Gwendolyn Z. Johnson, "Health Conditions in Rural and Urban Areas of Developing Countries", Population Studies, Vol. XVII, March 1964, pp. 293-309.

On the whole the censensus in the recent literature is toward lower infant and child mortality in urban than in rural areas in the LDCs.[21]

Assigning even approximate parameters to the conclusion just stated is not possible with the present data. But it is possible to make reasonable assumptions (Table 9). The first set is, by design, one that assigns the largest probable differential in mortality of children under 5 between the rural and urban populations in the LDCs in favor of the cities. For the DCs equality is assumed, since any realistic differences in mortality rates would have little effect on the shift from child-to birth-ratios. In the second set of assumptions the rural-urban differences in children's mortality in the LDC's are cut in half--largely to demonstrate what effects one change has on the R/U ratios for crude birth rates.

Use of the maximum allowance for rural-urban differentials in children's mortality, in favor of the cities widens the fertility differentials between the rural and urban populations (compare the R/U ratios in Table 9, column 6 with those in Table 1, column 5). In other words, the rural-urban differentials in number of children 0-4 per 1,000 of population are too narrow because in the countryside the higher birth rate is partly offset by the assumed higher mortality. If, on the other hand, we were to assume that children's mortality is higher in the cities than in the countryside, the rural-urban differentials in

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[21]Shorter in the paper cited in the notes to lines 27-29 of Table 8, writes regarding the findings for Turkey: "The data show a pattern typical of recent experience in developing nations in which the urban population enjoys higher life expectancy than the rural population." See also the summary in the background paper by C.C. Spicer, "Health and Mortality", for the World Population Congress of 1965 (mimeo. pp. 54-6).

Table 9

Approximations to Crude Birth Rates, Rural and Urban Populations, Major Regions, Late 1950's and Early 1960's

	Assumed ratio of rural to urban mortality, to age 5	Mortality to age 5		Derived Births per 1,000, 5 Year Period		R/U col 4/ col.5
		Rural	Urban	Rural	Urban	
	(1)	(2)	(3)	(4)	(5)	(6)
Assumption 1						
1. Subsaharan Africa	1.50	284	189	250	215	1.16
2. North Africa & Middle East	1.20	214	178	239	220	1.09
3. Asia	1.20	205	171	208	177	1.18
4. Latin America	1.20	162	135	217	183	1.19
5. LDCs		213	164	228	197	1.16
6. DCs	1.00	30	30	103	91	1.13
Assumption 2						
7. Subsaharan Africa	1.25	279	223	248	224	1.11
8. North Africa & Middle East	1.10	207	188	237	223	1.06
9. Asia	1.10	203	185	207	180	1.15
10. Latin America	1.10	157	143	216	184	1.17
11. LDCs		208	181	226	200	1.13
12. DCs	1.00	30	30	103	91	1.13

Notes: Column 1: For the basis of assumptions see Table 8 and discussion in the text.

Columns 2 and 3: Having the ratios in column 1, the shares of rural and urban population and children under 5 per 1,000 respectively within each region, given in Table 1, and the over-all mortality rates estimated in Table 7, we derived mortality to age 5 for the rural and urban population separately (from an equation in which x is the mortality for say the urban children and the weights are those of mean and rural children). The rural-urban proportions of children under 5 for lines 2 and 8 were calculated by weighting the two regions in Table 1 by the numbers of countries covered.

Columns 4 and 5: Calculated by dividing the ratios of children 0-4 per 1,000 for rural and urban population respectively, from Table 1, columns 3 and 4, by the survival ratios (derived form columns 2 and 3, by subtracting the mortality rates, expressed as fractions, from 1.0).

Lines 5 and 11, columns 2-5: Derived from the averages for the four regions, weighted by the number of countries used in Table 1 (13 for lines 1 and 7; 8 for lines 2 and 8; 10 for lines 3 and 9; and 17 for lines 4 and 10).

crude birth rates would be even narrower than the differentials in children-ratios in Table 1.

If the range suggested by the two sets of assumptions in Table 9 is at all realistic, and it seems preferable to the assumption of equality of children's mortality in the cities and countryside, some findings observed in Table 1 are modified. The R/U ratio of less than 1 in so many cases in Subsaharan Africa -and the generally low R/U ratio for that continent in Table 1- are tentatively explained by the rural-urban mortality differentials. As a result, the rural-urban differentials in crude birth rates are about the same for Subsaharan Africa as for South Asia and not very different from those for Latin America (see column 6, lines 1, 3, and 4)--although the ratio for North Africa and the Middle East is still rather low (line 2). Also, the R/U ratio of crude birth rates for the LDCs is similar to that for the DCs, whereas the ratios of children to total population were distinctly lower.

But the other major conclusions of Table 1, concerning the limited spread between rural and urban fertility, and its minor contribution to the fertility differentials between LDCs and DCs, remain unchanged when we shift from ratios of children under 5 to crude birth rates. Here, even more than in Table 1, both the rural and urban sectors of the LDCs show much higher birth rates than the corresponding sectors of the DCs. Indeed, the crude birth rate for the urban population of the LDCs, at either 197 or 200, is about twice the crude birth rate of the rural populations of the DCs (103). In discussing the findings of Table 1, we emphasized that the rural sector of the DC's (even with allowances for the non-farm component) is more urban than even the urban population of the LDCs--as

far as fertility (and associated characteristics of life and behavior) are concerned; and that modernization and economic growth should mean urbanization of both the rural and urban sectors of LDCs. These remarks have even greater relevance with the shift from children under 5 ratios to population to crude birth rates.

6. Allowing for Proportions of Women of Childbearing Ages

Rural-urban differentials in crude birth rates, derived and discussed above, are affected by possible differences in the proportions of women of child-bearing ages among the rural and urban populations. These proportions may be associated with internal migration, which is highly selective in its concentration on certain sex and age groups. We should, therefore, consider them, particularly since they shed some light on international differences in the selectivity aspects of internal migration toward the cities.

In columns 1-3 of Table 10 we show the average proportions of women aged 15-49 in the rural and urban populations of the major groups of countries. In Africa and Asia, the urban proportion tends to be about the same as, or only slightly higher than, the rural; whereas in Latin America and all other groups, it is significantly greater than the rural. As a result, the average shares for urban and rural population for Asia and Africa combined are 23.5 and 23.6 percent respectively (line 15, Columns 1 and 2) and 15.5 of the 31 countries show lower proportions in the cities; whereas the shares for Latin America are 20.8 and 25.5 percent, more than a fifth higher in the cities (line 5), and the averages for the DCs are 21.5 and 24.7 percent respectively, an excess of about a

Table 10

Shares of Females and Males, Aged 15-49, in Rural and Urban Populations, Major Regions, Late 1950's and Early 1960's
(percentages)

	Females			Males			Sex Ratio		
	R	U	Number of Countries	R	U	No. of Countr.	R (col. 1,3)	U (col. 2,4)	Co. 7 / Co. 8
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Subsaharan Africa (13)*	25.9	25.4	8.5	20.6	26.7	11	0.80	1.05	0.76
2. North Africa (5)	21.4	22.0	4	20.6	22.8	5	0.96	1.04	0.92
3. Middle East (3)	20.8	20.8	1 (-)	19.1	22.5	3	0.92	1.08	0.85
4. South Asia (10)	22.6	22.7	5	22.2	26.4	10	0.98	1.16	0.84
5. Latin America (17)	20.8	25.5-	17	21.6	21.8	8	1.04	0.85	1.22
6. LDCs, Europe (5)	22.9	26.1	4.5	22.3	24.4	4	0.97	0.93	1.04
7. DCs Europe (9)	21.5	24.7	9	23.3	23.5	5	1.08	0.95	1.14
8. U.S. and Canada (2)	20.8	24.2	2	22.7	23.1	1	1.09	0.95	1.15
9. Australia and New Zealand (2)	20.7	23.4	2	24.6	23.2	2	1.19	0.99	1.20
10. Japan (1)	24.8	28.4	1	22.5	27.4	1	0.91	0.96	0.95
11. Communist Europe (6)	23.6	26.8	6	22.4	26.3	6	0.95	0.98	0.97
12. Africa (18)	24.6	24.4	9.5	20.6	25.6	16	0.84	1.05	0.80
13. Europe (20)	22.5	24.8	19.5	22.8	24.6	15	1.01	0.99	1.02
14. LDCs (48)	22.6	24.2	32.5	21.2	24.2	37	0.94	1.00	0.94
15. Asia and Africa (31)	23.6	23.5	15.5	21.0	25.6	29	0.89	1.09	0.82
16. DCs (14)	21.5	24.7	14	23.3	23.7	7	1.08	0.96	1.12

Notes: *For Zambia the data are for ages 15-44.
The underlying data are from the source cited for Table 1; and the countries included in each group are identical with those used in Table 1. The entries in columns 3 and 6 show the number of countries in which the differences between the shares in rural and urban populations are in the same direction as those in columns 1-2 and 4-5 respectively.

seventh (line 16). The results are roughly similar to those for women aged 20-34 in rural and urban populations used in Table 5 to derive approximations to internal migration of children under 5. There, too, we found small differences in proportions for Asia and Africa, and much more marked differences for Latin America and the DCs.

The implicit low proportions of women aged 15-49 migrating to the cities in Asia and Africa are associated with implicit high migration proportions of males. For the several groups of countries on these continents, the proportions of men aged 15-49 is much greater among the urban than among the rural populations (see lines 1-4, columns 4-6). The average proportions for Asia and Africa combined are 21.0 and 25.6 percent respectively, a difference of well over a fifth. By contrast, in Latin America and the DCs where the proportions of women 15-49 in urban were markedly above those in rural populations, the differences for the proportions of men are quite minor. For Latin America these proportions are 21.6 and 21.8 percent respectively and for the DCs as a whole they are 23.3 and 23.7 percent respectively, both insignificant differentials. Obviously in Asia and Africa the internal migration toward the cities is concentrated on men, while that in Latin America and the DCs appears concentrated on women. (Even equal proportions may mean internal migration, given the lower rate of natural increase in the cities.)

As a result of the differences in the propensity of men and women to internal migration in Asia-Africa as compared with Latin America and the DCs, the sex-ratios, i.e. the ratios of men to women, particularly in

the active ages of 15-49, are quite different for the rural and urban populations (columns 7-9). In Asia-Africa the sex ratio is low in the countryside, and high in the cities. In Latin America and the DCs, it is high in the countryside and low in the cities. The contrast in this respect between the LDCs and the DCs stressed by the United Nations report on urbanization is true of Asia-Africa, but not of Latin America.

The reasons for these differences between men and women in their propensity to internal migration may be those cited in the United Nations report--poorer residence conditions and fewer employment opportunities for women in the cities of Asia-Africa than in those of Latin America (and the DCs). But other factors are probably the determining ones, since living conditions for rural in-migrants and the potentials of employment opportunities for women may be about the same in Latin America and in Asia-African cities. These other factors may lie in the countryside, in the family structure, and the institutional forces and traditions that may limit the role of women more sharply in Asia-African countries than in Latin America. This topic, however, requires more intensive exploration than can be given to it here.

Having proportions of women in childbearing ages, rural and urban, we can reduce the ratios of children under 5 years to total population to ratios to women of childbearing ages--i.e. to a base that represents child-bearing capacity (Table 11). In columns 1-14 we show the ratios to women 15-49, the latter unweighted by differences in child-bearing capacity. But the fertility cycle is closely associated with the age of woman, showing

Table 11

Children under 5 per 1,000 Women of Childbearing Ages, Rural and Urban Populations, Major Regions, Late 1950's and Early 1960's

	Per 1,000 Women Aged 15-49 unweighted				Per 1,000 Women Aged 15-49, Weighted			
	Rural	Urban	R/U	Number of Countries	Rural	Urban	R/U	Number of Countries
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Subsaharan Africa (12)	689	665	1.04	8	905	849	1.06	8
2. North Africa (5)	864	810	1.07	2	1,151	1,077	1.07	4
3. Middle East (3)	939	898	1.05	2	1,258	1,199	1.05	2
4. South Asia (10)	738	653	1.13	9	982	867	1.13	9
5. Latin America (17)	880	621	1.42	17	1,190	837	1.42	17
6. LDCs Europe (5)	481	384	1.25	5	667	523	1.28	5
7. DCs Europe (9)	406	321	1.26	9	578	453	1.28	9
8. U.S. and Canada (2)	599	478	1.25	2	857	669	1.28	2
9. Australia and New Zealand (2)	670	442	1.52	2	928	628	1.48	2
10. Japan (1)	363	282	1.29	1	497	379	1.31	1
11. Communist East Europe (6)	411	302	1.36	6	564	409	1.38	6
12. Africa (17)	741	707	1.05	10	977	916	1.07	12
13. Europe (20)	426	331	1.29	20	596	457	1.30	20
14. LDCs (47)	803	677	1.19	38	1,073	895	1.20	40
15. Asia and Africa (30)	759	708	1.07	21	1,007	928	1.09	23
16. DCs (14)	468	358	1.31	14	662	504	1.31	14

Notes: All entries are from data underlying Table 1 and 10. The number of children per 1,000 women was calculated for each country, and arithmetic means were taken for each group (the number of countries is shown in the stub).

For the countries and dates of coverage see the notes to Table 1. The only country omitted here is Zambia, for which the age detail is not available.

In columns 1-4 we give the total number of women aged 15-49. For columns 5-8, women aged 20-34 are weighted by 1, and those aged 15-19 and 35-49 are weighted by ½.

The entries in columns 4 and 8 show the number of countries for which the R/U ratio is above 1, as in columns 3 and 7.

low levels for the very young females, peak fertility in the 20's and early 30's, and a rapid falling off in fertility after the mid-30's. The parameters of this fertility-by-age pattern differ between the high and low birth countries. But to simplify calculations, we assume for columns 5-8 a constant ratio of combined fertility in ages 20-34 double that of combined fertility in ages 15-19 and 35-49. Any significant differences in the age structure within the childbearing ages would be revealed by this rough weighting; and, in any case, with the given data, minor differences could not be trusted.[23]

In fact, the differences in R/U ratios between the unweighted and weighted women-population bases are minor; but as might have been expected, the R/U ratios to a weighted base tend to be somewhat the higher (columns

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[23] The ratio used is too favorable to the ages other than 20-34, since it is less than ½ to 1, in the low fertility countries and even in Latin America. Thus, in the monograph cited in notes to Table 7, in the standardization (for age of women) Collver assumes a fertility schedule of 7, 7, and 6 for ages 20-24, 25-29, and 30-34 respectively (20 in all); of 1 for 15-19, of 4 for 35-39; of 1 for 40-44, and if we add 1 for 45-49, the total is 7 (see pp. 42-43 of the source). On the other hand, the range may differ for countries where marriages are early, as they are in Africa and Asia, and where the 15-19 weight may be far greater (see in this connection United Nations, Interim Report on Conditions and Trends of Fertility in the World, 1960-1965 (New York, 1972), Table 9, p. 67; Table 15, pp. 75-6; Table 19, p. 82; and Table 23, p. 88). These tables show relative contributions of women in each age group to gross total fertility, 1960 and 1965, for the DCs (Europe, North America, etc.), Latin American countries, Asian countries, and African countries. For African countries the assumed ratio of 1 to ½ seems valid, as it is for the only large South Asian country, viz. Pakistan.

7 and 3) for the DCs (except Australia-New Zealand)--suggesting a somewhat greater urban concentration in these countries of the 20-34 age group within the 15-49 year range. But the two sets of ratios agree closely, and while our summary dwells on the ratios in column 7, it applies to column 3 as well.

The R/U ratios in Table 11 are quite similar to those in Table 1, column 5. The former are somewhat higher than the latter, since the shift in base from total population of women to childbearing ages accentuates somewhat the excess of rural over urban fertility measures. But the moderate spread in Africa and Asia compared with Latin America remains, and the ratio for Latin America, particularly, is magnified by the shift in the base (from 1.15 in Table 1 to 1.42 in Table 11). The R/U ratios for the DCs are also substantially higher. In short, all the findings of Table 1 appear here, but are accentuated.

In Table 12, a brief supplement to Table 11, we shift the ratios of children 0-4 to women of childbearing ages, weighted, to cumulative birth rates to the same base--using the two sets of assumptions shown in Table 9. The over-all conclusion, on both assumptions, is that the standardized or refined birth rates also show moderate rural-urban differentials in Asia and Africa, the R/U ratio being between 1.13 and 1.17--compared with the ratios for Latin America between 1.45 and 1.47. The latter are wider even than that for the DCs, at 1.31. In short, our findings in Table 1 concerning the urban-rural differentials among various LDCs and DCs in ratios of children under 5 to total population are confirmed, and somewhat accentuated, in the birth rates standardized

Table 12

Approximations to Births (Cumulated over 5 Years) per 1,000 Women of Childbearing Ages (Weighted), Rural and Urban Populations, Major Regions, Late 1950's and Early 1960's

	Assumption 1			Assumption 2		
	Rural	Urban	R/U	Rural	Urban	R/U
	(1)	(2)	(3)	(4)	(5)	(6)
1. Subsahara Africa	1,259	1,045	1.20	1,252	1,088	1.15
2. North Africa and Middle East	1,515	1,366	1.11	1,502	1,383	1.09
3. South Asia	1,238	1,046	1.18	1,232	1,064	1.16
4. Latin America	1,418	967	1.47	1,408	974	1.45
5. Asia and Africa	1,317	1,128	1.17	1,310	1,156	1.13
6. LDCs	1,353	1,073	1.26	1,345	1,091	1.23
7. DCs	477	363	1.31	477	363	1.31

Notes: Derived from the rural-urban mortality rates for children under 5 (in Table 9) and the number of children under 5 per 1,000 women, 15-49 weighted Table 11, columns 5 and 6.

The entries in lines 5 and 6 are averages of lines 1-4, weighting them by the number of countries. For the latter see the notes in Table 9, except that only 12 countries are covered for Subsaharan Africa. Weighting by population would result in the averages for Asia dominating and the averages for all the other regions would have little importance.

for the proportions of women of childbearing ages (weighted for internal age structure within the 15 to 49 years range).

But the most important confirmation in Table 12 is of the limited contribution that intra-national rural-urban differences in fertility make to the international differences in fertility between LDCs and DCs. At this juncture, beyond which we cannot carry the analysis, it may help to recapitulate the evidence for this conclusion at the successive stages of analysis, from ratios of children under 5 to total population to birth rates over 5 years per 1,000 women of childbearing ages weighted for age-fertility differentials (Table 13).

At the three stages distinguished, the relative spread in fertility differentials between the LDCs and the DCs widens: the ratio of fertility in the former to that in the latter rises from 1.88 for children under 5 per 1,000 of population to 2.30 for crude birth rates to 3.17 for birth rates related to women of childbearing ages. The contribution of intra-national fertility differentials to these international spreads at the children under 5 per 1,000 of population level, is the average of the difference between the ratios in line 7, columns 2 and 3 and that in line 7, column 1, as a proportion of the latter, or 0.065/1.80, about 3.5 percent; at the level of crude birth rates (line 10) as 0.1/2.30 or about 5 percent; at the level of birth rates related to women of childbearing ages (line 13) as 0.285/3.17 or somewhat over 9 percent. Thus, as we refine the measures, relating them to childbearing capacity, the relative spread in fertility between LDCs and DCs becomes wider and the percentage accounted for by intra-national rural-urban differentials rises; but even at its highest, the latter is below 10 percent.

Table 13

Contribution of Intra-National, Rural-Urban Differences in Fertility to International Differences in Fertility Between Less Developed and Developed Countries

A. Proportions and Fertility Ratios

	Children under 5 per 1,000, Total Popul.		Crude Birth Rates, 5 Years		5 Year Birth Rates to Women 15-49 Weighted	
	Rural	Urban	Rural	Urban	Rural	Urban
	(1)	(2)	(3)	(4)	(5)	(6)
Proportions of rural and urban in Relevant Population bases (%)						
1. LDCs	70.8	29.2	70.8	29.2	69.1	30.9
2. DCs	35.2	64.8	35.2	64.8	31.9	68.1
Fertility Ratios						
3. LDCs	179	164	228	197	1,353	1,073
4. DCs	100	88	103	91	477	363

B. Combined Fertility Rates for LDCs and DCs

	Weights of rural and urban as given (1)	Weights of LDCs for both groups (2)	Weights of DCs for both groups (3)
Children under 5 per 1,000 of population			
5. LDCs	173.2	173.2	169.3
6. DCs	92.2	96.5	92.2
7. LDCs/DCs	1.88	1.79	1.84
Crude Birth Rates, 5 Year Totals			
8. LDCs	218.9	218.9	207.9
9. DCs	95.2	99.5	95.2
10. LDCs/DCs	2.30	2.20	2.18
5 Year Birth Rates Women 15-49 Weighted			
11. LDCs	1,266	1,266	1,162
12. DCs	399	442	399
13. LDCs/DCs	3.17	2.86	2.91

Notes: Panel A: Lines 1-2; Columns 1-4 are from Table 1, lines 14 and 15, col. 2; columns 5-6 are calculated from the averages of shares of women aged 20-34 in Table 5, and of women aged 15-49 in Table 10, weighting the 20-34 group by 1 and the residual within the 15-49 group by ½.

Lines 3 and 4: From Tables 1, columns 3 and 4; Table 9, columns 3 and 4, assumption 1, and Table 12, assumption 1.

Panel B: Column 1: The rural urban ratios given in lines 3 and 4, weighted by the shares given in lines 1 and 2.

Column 2: The rural and urban ratios given in lines 3 and 4, as weighted by the shares for the LDCs given in line 1.

Column 3: The rural and urban ratios given in lines 3 and 4, weighted by the shares of the DCs given in line 2.

Finally, one might add that this limited contribution of intra-national urban-rural differences in fertility to the international differences in fertility between the LDCs and DCs would probably not become significantly larger even if city size were covered in the analysis (see evidence on the size of city differences in fertility in Table 3 above). Detail on city size might uncover some more narrowly defined rural-urban contrasts in LDCs that are far sharper than the over-all rural-urban comparison; but the contribution of such sharper contrasts to the international rural-urban differences would have to be assigned much smaller weights than those employed for the complete rural and complete urban components in the country-wide total. Considerable interest would attach to comparisons between the very large cities, the smaller cities, etc. with respect to their differential fertility in the LDCs and the DCs; and in some of these narrower comparisons, the contribution of intra-national differences to international differences may turn out to be much greater than we found for all rural and all urban differences in Table 13. But the validity of our finding would remain, even though such greater detail might pinpoint the loci within the rural and urban components at which this limited contribution of intra-national differences to the differences between the LDCs and the DCs emerges.

7. Implications for Trends Over Time

While the intra-national rural-urban differentials in fertility are rather moderate, certainly in comparison with the international differences in fertility, they are fairly pervasive; and they tend to show, particularly when we deal with birth rates related to women of childbearing ages, lower fertility among the urban population. Since the share of urban population tends to grow in the course of economic growth, and certainly did over recent decades in most countries, even among the LDCs, the national fertility ratios should have dropped. Yet we know that in most LDCs no such decline occurred in the nation-wide fertility ratios, even in the crude or refined birth rates. This means that the rural fertility rate, or the urban fertility rate, or both have risen, and thus compensated for what should have been the depressing effect of the rise in the share of the urban population. And if this occurred, these intra-urban or intra-rural fertility rises represent trends that cannot be adequately explained within the frame-work of rural-urban fertility differentials.

Because the rural-urban fertility differentials are widest in Latin America, and because data are available only for Latin America among the less developed groups, we attempt to exploit these data to observe the changes over the decade extending roughly from 1940-44 to 1950-54. This period was chosen because rural and urban data on children 5-9 per 1,000 women aged 20-49 derived from the 1950 census are available in the United Nations source cited in the notes to lines 8-14 of Table 14.

Since we have comparable data based on the censuses for 1960 (or for some date in the early 1960's), we can observe not only the changes in nationwide fertility rates, but also within the rural and urban populations.

Rather elaborate if rough calculations were necessary; and the detailed notes to Table 14 explain the derivation. Here we are interested in the findings and these are summarized briefly.

First, despite the fact that the share of urban population in total increased over the decade (of the 1950's) by 7 percentage points, or between a sixth and a seventh, crude birth rates not only failed to decline, but rose by about 2 percentage points--while birth rates adjusted for women of childbearing ages (properly weighted) rose even more, by 4 percentage points or about a tenth (Panel A).

Second, for several countries, we have the number of children 5-9 per 1,000 women aged 20-49, around 1950 and around 1960. These ratios can be adjusted for mortality of children to age of 10, thus yielding ratios of births, in 1940-44 and 1950-54 to women of childbearing ages (unweighted)--but uncorrected for the trend bias involved in relating cumulative births to a population about 7½ years later. Any correction for the latter would tend to strengthen the findings. The results of these calculations show that like the observed rise in crude or refined birth rates (in Panel A), the estimated birth rates per 1,000 women aged 20-49 for both rural and urban populations also rise.

Table 14

Data Relating to Urbanization and Fertility in Latin America, Changes Over the Decade Since the Late 1940's or Early 1950's

A. Proportions of Urban in Total Population, and Birth Rates

	Proportion Urban (%) (1)	Crude Birth Rate Per 1,000 (2)	Standardized Birth Rates, per 1,000 (3)
Differing Number of Countries			
1. Number of countries	14	11	9
2. 1950, or 1945-49 (for B.R.)	37.4	43.5	42.8
3. 1960 (or 1955-59)	44.4	44.9	46.7
4. Number of countries with change as shown in lines 2-3	14	10	9
Same Countries (7)			
5. 1950, or 1945-49	42.9	42.0	41.8
6. 1960, or 1955-59	50.5	43.8	45.9
7. Number of countries (as in lines 5-6)	7	7	7

B. Children 5-9 per 1,000 Women 20-49 Years of Age in Survival Rates to Age 5

	Children 5-9 per 1,000 Women 20-49		Number of countr. as in 1-2	Survival Rates, Children Under 5	
	About 1950 (1)	1950 and early 1960's (2)	(3)	1940-44 (4)	1950-54 (5)
Different Number of Countries					
8. Number of countries	10	10	-	6	6
9. Rural	898	1,031	9	0.7645	0.8315
10. Urban	559	707	9	"	"
11. Number of countries (as in 9-10)	10	10			
Same Countries (6)					
12. Rural	870	1,010	6	0.7645	0.8315
13. Urban	547	696		"	"
14. Number of countries (as in 12-13)	6	6			

C. Approximations to Cumulative Births per 1,000 Women Aged 20-49, Rural and Urban (no adjustment for bias in base trend)

	Rural		Urban	
	About 1940-44 (1)	About 1950-54 (2)	About 1940-44 (3)	1950-54 (4)
15. Estimated Rural-Urban Proportions in children 0-9	73.6	67.0	26.4	33.0
16. Estimated survival ratio to age 10, assumption 1	0.731	0.803	0.774	0.836
17. Ditto, assumption 2	0.735	0.809	0.759	0.826
18. Derived, births per 1,000 women aged 20-49, ass. 1	1,190	1,270	707	833
19. Ditto, ass. 2	1,184	1,261	721	843

Table 14 continued:

Notes: Panel A Column 1: The underlying data are from United Nations, Demographic Yearbook 1970 (New York, 1971), Table 5, pp. 140 ff. The fourteen countries included are: Costa Rica, Dominican Republic, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Puerto Rico, Brazil, Chile, Colombia, Ecuador, Paraguay, Venezuela. Honduras was excluded, although the data were available, because the sharp decline in the share of urban (from over 30 in 1950 to 23 percent in 1960) indicate lack of comparability.

The seven countries covered in lines 5-6 are: Chile, Colombia, Costa Rica, El Salvador, Mexico, Panama, Venezuela.

Column 2 and 3: The basic source is the Collver monograph cited in notes Table 7.

In addition to the 7 countries just listed, column 2 includes: Ecuador, Guatemala, Honduras, and Peru. The averages in column 3 cover the countries listed for column 2, but exclude Ecuador and Guatemala.

Panel B

Column 1: The data are from the United Nations, Population Bulletin no. 7, 1963 (with special reference to fertility) (New York, 1965), Table 8.7, p. 133. The ten countries include: Brazil, Chile, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Nicaragua, Panama, and Paraguay.

The six countries covered in lines 12-14 are from the ten above, and exclude the Dominican Republic, Nicaragua, Paraguay, and Brazil.

Column 2: The data are derived from the individual country data in The United Nations, Demographic Yearbook 1970 (New York, 1971), Table 6.

Columns 4-5: The underlying data are from the Collver monograph repeatedly cited. The six countries included are: Chile, Costa Rica, Ecuador, El Salvador, Guatemala, Panama. The ratios apply to children under 5.

Panel C

Line 15: For the six countries (those covered in lines 12-14) the average shares of rural-urban populations were 63.4 and 36.6 percent about 1950, and 57.9 and 42.1 percent about 1960 (or early 1960's). But we need the shares for about the period when the births occurred (i.e. mid 1940-44 and mid 1950-54 respectively); and we also need the rural-urban shares among women 20-49 years of age, from which we can then approximate the rural-urban distribution of children under 10 (and implicitly births). The balance of backward shift by about 8 years, and of the allowance for higher share of women 20-49 in cities, leaves the shares at 63.5-36.5 in 1950 and 58.0-42.0 in 1960. Weighting these by the ratios in lines 12 and 13, columns 1 and 2, yields the shares now shown.

Line 16-17: The mortality of children to age 10 was set at 1/0.91 of mortality to age 5 (i.e. about 10 percent higher). Given the mortality to 5 shown implicitly in line 12, columns 4 and 5, we obtain total mortality of children to age 10 of 259 per 1,000 in 1940-44 and 185 per 1,000 in 1950-54. Having these ratios and the shares of rural-urban groups among children under 10 in line 15, we can derive the rural-urban mortality on assumption 1, 1.2 for rural to 1 for urban (see Table 9) or assumption 2, 1.1 for rural to 1 for urban. Subtracting the results from 1,000 and dividing by 1,000 we obtain the survival ratios.

Line 18-19: The number of children 5-9 per 1,000 women aged 20-49 in lines 12 and 13, columns 1 and 2, divided by the survival ratios in lines 16 and 17, columns 3-4.

Third, as the data stand, the urban birth rates rose much more than the rural. On both assumptions, the rural rate rose about 7 percent and the urban about 18 percent (lines 18 and 19). And the urban ratios of the number of children 5-9 per 1,000 women aged 20-49 also show greater proportional rise. Unless there has been a marked relative retardation in the growth of urban population that is at the base of these measures, or an improbably large rise in the survival ratio for urban than for the rural children under 10, the greater rise in the fertility of the urban population over the decade covered in Table 14 is genuine.

Such movements, so contrary to what one expects with economic growth and urbanization, have been noted, at least for individual countries.[24] And stability, if not rise, of nationwide birth rates has been found, despite a concurrent rise in the share of urban population in a number of LDCs outside of Latin America. But we are not concerned with thoroughly documenting this point here. The information in the United Nations Domographic Yearbooks, although based on approximate estimates, shows a general failure of crude birth rates over the decade of the 1950's to decline in much of Africa and South Asia, while the share of urban population was rising.

It may not be difficult to suggest realistic hypotheses that would explain how a cross-section association between lower fertility and urban character of locality could be combined with a rise in both urban and rural fertility ratios--even while the country became increasingly urbanized.

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[24] See e.g. John R. Weeks, "Urban and Rural Natural Increase in Chile". Milbank Memorial Fund Quarterly, January 1970, Vol. XLVIII, no. 1, pp. 71-89.

A greater influx into the cities of rural in-migrants, constituting a higher proportion of recent in-migrants, could easily raise the fertility rates in the growing cities. A reduction in the share of regions with lower birth rates, and a rise in the share of the more prolific regions, among rural population, possibly associated with a concentration of migration out of the less prolific rural regions than others (perhaps because of greater proximity to the cities), would result in a higher fertility rate for total rural population--even though fertility by the specific region may show no rise.

Whatever the explanation, sizable movement over time within the rural and the urban components of total population--whether upward as they appeared to have been in Latin America and other less developed areas during the decade, or downward as was usually the case in the longer history of the presently developed countries--mean that the rural-urban differentials cannot explain much of the movement over time. Here also, the contribution of these differentials as an explanatory variable may be limited.

8. Concluding Comments

The paper deals with an international, cross-section comparison of urban and rural fertility measures for a wide variety of countries, the data relating to the late 1950's and early 1960's. The rather lengthy discussion was required because of the several steps needed to pass from the more widely available data on ratios of children under 5 to total population to the approximations to crude and standardized birth rates.

The few findings can be stated briefly.

First, whether ratios of children under 5 to total population, or the standardized birth rates for women of childbearing ages, the measures for urban and rural fertility show fairly generally an excess of rural over urban fertility.

Second, this rural-urban difference is quite moderate. It is particularly limited, relatively, for the less developed countries of Africa and South Asia--as contrasted with wider differentials in Latin America and in most of the developed countries. In some African countries, urban fertility appears to be higher than rural; while the rural-urban contrast, in excess of the rural, appears most marked in the standardized birth rates for women of child-bearing ages in Latin America.

Third, while the combination of lower fertility in cities with a shift in population toward the cities should have resulted in a lowering of the total birth rate, there is no evidence of such a decline in total birth rates over the 1950's in the less developed regions. This finding is particularly significant for Latin America, in which urbanization was fairly rapid and the rural-urban differentials in birth rates particularly marked. The implication is that either rural, or urban or both sets of birth rates rose over time--to offset the depressing effect expected from urbanization.

Fourth, because of the narrow range of rural-urban differences in fertility revealed by the data, these intra-country differentials contribute little to the explanation of the wide inter-country differentials in

fertility between the less developed and the developed regions of the world. The contribution of these internal rural-urban fertility differentials to accounting for the international differences in fertility is, at its highest, below 10 percent of the international range.

Fifth, there is an interesting difference between South Asia and Africa, on the one hand, and Latin America and developed countries, on the other, in the apparent propensity of migration toward cities of women and men of active ages (15 to 49). In Asia-Africa the cityward migration is much more concentrated on men--as reflected by higher proportions of men of these ages in total urban population than in total rural population and no differences in the proportions of females. In Latin America and the developed countries the cityward migration is much more concentrated on the women--as reflected by higher proportions of women of these ages in total urban population than in rural, and no differences in the proportions of males.

The findings raise a number of wider-reaching questions which could not be discussed in the paper and have to be deferred for more intensive analysis in other papers. Three complexes of these questions may be briefly suggested.

The first relates to the experience with trends over time in urban and rural fertility in the course of growth of the presently developed countries. Has it also been true of this historical experience that rural-urban differentials in fertility were moderate--and that the rural-urban

shift of the population contributed little to the lowering of the country-wide fertility levels, the latter largely accounted for by declines within the urban and rural components taken separately? And if so, what is the significance of these findings? Would they apply also if instead of rural-urban differentials we were to deal with fertility differentials by occupation or industrial attachment?

The second group of questions relates to the ~~curious~~ contrast in sex differences in cityward migration propensity between Asia-Africa, on the one hand, and Latin America-developed countries, on the other. Is there a parallel to it in the historical development of presently developed countries, in a shift over time from a greater migration propensity of the male component of the labor force toward a greater migration propensity of the female component? And if so, what are the determining factors that account for both the differential propensity, and the changes in it over time (or current differences among regions)?

The third group of questions relates to the inferred <u>rises</u> within the rural, or urban, fertility rates (or in both) in the currently less developed countries, strongly suggested for the decade of the 1950's--and possibly to be found for the 1960's when the 1970 censuses become fully available. What is the complex of factors underlying such unexpected movements? Has there been a parallel to them in some phase of the growth of the presently developed countries, when the countrywide fertility rate also failed to decline, despite growing urbanization and cross-section rural-urban differentials showing lower fertility in the cities?

The paper has raised more questions than it answered. But this was to be expected in a field in which relevant data have emerged only recently, and where the wide variety of demographic and economic experience inhibits easy and clear-cut generalizations.