

SOME ASPECTS OF FERTILITY IN EGYPT

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INTRODUCTION

THE growing concern in Egypt about the rapid increase of its population makes desirable more accurate knowledge of the reproductive experience among the various sections of the population.

The available data do not allow a definitive study of attitudes, nor do they permit the investigation of the extent to which methods of birth limitation are known and deliberately practiced within any of the social classes. It is possible, however, to utilize the available data to discuss several important questions such as whether there exist any fertility differentials between urban and rural populations, which sections of the population are less reproductive than others, and what the reproduction of a married woman would be at the termination of her reproductive period in marriage. These are the points which will be considered in this paper.

AVAILABLE DATA

A study which aims at discovering satisfactory evidence as to whether there exist any fertility differentials between social classes must be based on comparison between homogenous groups in these classes. The investigator should therefore have access to data on the age, duration of current or last marriage, and number of children born to every woman currently married, widowed, or divorced. It is also helpful to know the history of marital life of women who have been married more than once. This latter information is more difficult to obtain and studies are often restricted to the current marriage.

The census of 1947 was the first to include data on reproduction by age of mother and duration of marriage. The published results of this census include three tables which distribute the

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married women in the whole country at the time of the census according to: (1) number of children ever born during the current marriage, by duration of this marriage; (2) number of children ever born during the current marriage, by age of the woman at the census; and (3) duration of current marriage and age at the census.

Each of these tables includes two of the three variates: number of children, duration of marriage, and age. A table which includes the three variates would have been much more useful. It would have divided the population of married females into much more homogeneous groups and also given a clearer picture of the reproductive history of the female. Such data are unfortunately not available, although the relevant information is necessarily on the punch cards.

The usefulness of the above tables is greatly reduced by the fact that they relate only to the whole country. Their value to a study of differential fertility would have been greatly enhanced had the tabulations been made according to broad employment brackets or geographic regions.

All we can get from the census about fertility by regions are three univariate tables for each region; one giving the number of children ever born during the current marriage for each married woman, another giving the age distribution of married women, and a third giving a distribution of the same women according to duration of their current marriage. Cross-classifications of these variables are not available in the published census results.

In addition to the above census materials we have several useful vital statistics tables. We will employ here a 1947 vital statistics table which distributes the fathers of babies born in Health Bureau areas in 1947 according to order of the birth and occupation of the father. Several other statistics about marriage and divorce in 1947 published in the same volume will also be utilized.

Three partial adjustments in the census tables have been made for present purposes. The first relates to the reported

| DURATION OF MARRIAGE IN YEARS | PERCENTAGE OF WOMEN WITH "NUMBER OF CHILDREN NOT GIVEN" |
|----------------------------------|--|
| 0-4 | 22.06 |
| 5-9 | 7.62 |
| 10-14 | 4.92 |
| 15-19 | 4.25 |
| 20-24 | 4.16 |
| 25-29 | 3.75 |
| 30-34 | 4.22 |
| 35-39 | 3.83 |
| 40-44 | 4.30 |
| 45 and Over | 4.68 |
| Not Given | 55.96 |

Table 1. Percentages of women classified in the 1947 Census of Egypt as "number of children not given," by duration of marriage.

frequency of childless married women of marriage duration 0-4 and 5-9 years. The reason for this adjustment can be seen from the percentages of women classified under "number of children not given" in each marriage duration in Table 1. The reader will notice outstanding proportions of women for whom the number of children was not given on the census sheet in the first two duration intervals. The excess in the first two percentages is in all probability attributable to the failure of the enumerators in many of these cases to insert a sign denoting no children in the corresponding space when the woman had no children from her current marriage.² A substantial adjustment for this error would therefore be (a) to consider the excesses in durations 0-4 and 5-9 over the percentage in durations 10 and over, namely 4.35, as resulting solely from this error and consequently (b) to shift the two excesses into their corresponding cells (*i.e.*, durations 0-4 and 5-9) in the zero children category. This adjustment is not quite complete, however, because among durations 10 and over there still is an unknown number of childless women classified as "number of children

² The same error was observed in several other countries. For example, it was found that in the 1940 census of the United States the proportion of non-reports on children ever born was 12.6 per cent. In that census no instructions were given as to the proper entry for childless women. In the 1950 census a check box was provided on the census schedule for replies of "None." The proportion of non-reports in that census was 9 per cent.

| AGE | PERCENTAGE OF WOMEN WITH "NUMBER OF CHILDREN NOT GIVEN" |
|-------------|--|
| Under 20 | 34.59 |
| 20-24 | 21.89 |
| 25-29 | 13.64 |
| 30-34 | 11.13 |
| 35-39 | 8.98 |
| 40-44 | 10.37 |
| 45-49 | 8.91 |
| 50-54 | 12.15 |
| 55-59 | 8.54 |
| 60-64 | 12.37 |
| 65 and Over | 13.90 |
| Not Given | 33.35 |

Table 2. Percentage of women classified in the 1947 Census of Egypt as "number of children not given," by age of women.

not given" because of the same error. The correction that has been made increases the total number of childless women from 408,063 to 574,651.

A similar adjustment was found necessary, for the same reason, in the census table giving the number of children by age of woman in 1947, in which we find the following proportions of women with "number of children not given." (Table 2.)

Here again we notice outstandingly high percentages in the first two intervals. We also find that the percentages among 25 and over are relatively high in comparison with their correspondents in the case of marriage duration. The reason for the latter observation—as well as for the first—is in all probability the same as before, namely failure to insert the sign denoting zero in the case of a childless woman. It is obvious that since the number of childless women is higher among ages 25 and over than among durations 10 and over (owing to remarriage and late marriage), the above error should happen more frequently among ages 25 and over than among durations 10 and over. Adjustment for this error must consequently be carried out in all age intervals rather than in the first two only as we did in the case of duration. The adjustment was made as follows: (a) Since the marginal distribution of married women

according to their number of children should be the same in the age table as in the duration table, the adjusted number of childless women in the age table should be raised to 574,651. This rise is brought about by shifting, as in the case of duration, 166,588 women from the "number of children not given" category into the zero children category. (b) The frequencies in each age cell in the "number of children not given" category are reduced by certain amounts and their correspondents in the zero children category are raised by the same amounts in such a manner as to yield equal percentages of women with "number of children not given" in each age interval and at the same time lead to a total shift of 166,588 women.

A possible explanation of the fact that 10.1 per cent of the married women were in the "duration not given" category as compared with only 0.3 per cent in the "age not given" category is that the census questions were answered by neighbors who were able to estimate the women's ages but not their marriage durations. This view is strengthened by the observed excess, as compared with the trend, in the percentage of women with number of children not given in the age intervals including a multiple of 10 in the preceding table. The excess indicates that the neighbor has estimated the woman's age in terms of multiples of 10, which are most frequently used in age estimation, but refrained from giving the harder-to-know number of children ever born to her during the current marriage. This explanation cannot be confirmed, however, without knowledge of the field operations of the census.

The third adjustment is in the table giving the number of children by marriage duration. It is required by the observed increase with the number of children of the proportion of women for whom the marriage duration is not given as shown in Table 3.

The available data do not seem to throw any light on the reason for this systematic increase. It cannot, for example, be attributed to decreasing ability on the part of the woman to give her marriage duration as she advances in age because, as

| NUMBER OF CHILDREN | PERCENTAGE OF WOMEN WITH DURATION OF MARRIAGE NOT GIVEN | PERCENTAGE OF WOMEN WITH AGE NOT GIVEN |
|--------------------|---|---|
| 0 | 1.8 | 0.37 |
| 1 | 2.4 | 0.26 |
| 2 | 3.6 | 0.21 |
| 3 | 4.6 | 0.17 |
| 4 | 5.6 | 0.16 |
| 5 | 6.5 | 0.16 |
| 6 | 7.2 | 0.14 |
| 7 | 7.5 | 0.16 |
| 8 | 8.4 | 0.15 |
| 9 | 9.2 | 0.17 |
| 10 and Over | 10.7 | 0.18 |
| Not Given | 59.1 | 0.75 |
| ALL WOMEN | 10.1 | 0.28 |

Table 3. Percentage of women in the 1947 Census of Egypt with duration of marriage and age of women not given, by number of children.

we can see from the table, no similar increase with the number of children existed in the case of women for whom the age was not reported. In fact the percentages in the latter case show a systematic decrease up to six children. Nevertheless, the women with duration not given cannot be discarded from the table giving number of children by marriage duration because we would then be excluding a more reproductive group. In this situation the most plausible adjustment is perhaps to distribute these women proportionately over the marriage duration cells. For example, in the group of women who had one child the adjustment would be to take the members for whom duration was not given and distribute them over the durations 0-4, 5-9, . . . according to the reported proportions of females in these intervals.

The two adjusted tables were utilized to calculate the duration specific and age specific cumulative reproduction rates. The rates are given in Tables 4 and 5 respectively.

We have no means of testing the accuracy of reporting beyond the above discussed adjustments. However, the average number of children does taper off to a reasonable extent toward

| MARRIAGE DURATION | CUMULATIVE REPRODUCTION RATES |
|-------------------|-------------------------------|
| 0-4 | .64 |
| 5-9 | 2.18 |
| 10-14 | 3.77 |
| 15-19 | 5.05 |
| 20-24 | 5.85 |
| 25-29 | 6.61 |
| 30-34 | 6.69 |
| 35-39 | 7.08 |
| 40-44 | 7.06 |
| 45 and Over | 7.42 |
| All Durations | 3.66 |

Table 4. Duration specific cumulative reproduction rates.

the end of each of Tables 4 and 5, which is what we would expect under unchanging fertility. (For a discussion of the stability of fertility in Egypt, see El-Badry: "Some Demographic Measurements for Egypt," *Milbank Memorial Fund Quarterly*, July, 1955.) Therefore, we can at least say that, among women aged 45 and over, there is no indication that a woman was more apt to forget the number of her children as she advanced in age.

DIFFERENTIAL FERTILITY BY GEOGRAPHIC REGIONS

For the purposes of this study, the only possible way of sepa-

Table 5. Age specific cumulative reproduction rates.

| AGE | CUMULATIVE REPRODUCTION RATES |
|-------------|-------------------------------|
| Under 20 | .41 |
| 20-24 | 1.19 |
| 25-29 | 2.38 |
| 30-34 | 3.52 |
| 35-39 | 4.75 |
| 40-44 | 5.25 |
| 45-49 | 6.00 |
| 50-54 | 5.68 |
| 55-59 | 6.40 |
| 60-64 | 5.82 |
| 65 and Over | 5.96 |
| All Ages | 3.66 |

rating urban and rural data in the available tables is to divide the whole country into two sections: (1) urban including the five governorates (cities) and (2) predominately rural including the provinces. Now since we have no access to cross-classifications of reproduction, marriage duration, and age for geographic sections, the reproduction of two sections can be compared only by averaging the data supplied by the three univariate tables mentioned before, namely the distributions of married women in 1947 according to number of children born during the current marriage, duration of marriage, or age.

When we start to calculate the average number of children per married woman in each of the two sections we find ourselves confronted again with the above discussed deficiency in the number of childless women due to the insertion of some of them in the "number of children not given" category. The averages are found to be 3.61 in the governorates and 3.68 in the provinces, if we assume that the proportion to be shifted from the "number of children not given" category into the zero children category because of this error is the same in the two sections. We have no way of judging the validity of this assumption, but the fact that the proportion of all women with "number of children not given" is 12 per cent in the governorates and 14 per cent in the provinces suggests a higher degree of incidence of this error in the latter section. If we attribute this excess of 2 per cent in the provinces to this error only, shift it to the zero children category, calculate the remaining frequency that should be shifted to that category, and distribute it over the two sections according to the total number of women in each, we find that the average number of children per married woman becomes 3.65 in the cities and 3.66 in the provinces.³

It is thus obvious that no matter what the extent of this error is, the excess reproduction in the provinces over the governor-

³ In calculating the average reproduction, a mean value of 12 children for the interval 10 and over was assumed. It was found that a mean value of 11 would still keep the difference between the provinces and governorates well below .1 children. A mean value larger than 12 would reduce even further the calculated difference because of the existence of a larger proportion of women with 10 or more children in the governorates.

ates is in all probability below .1 children per married woman. The standard error of difference is less than .005.

Let us now compare the durations of marriage in the two communities. First we find that the observed high percentage of women with unknown duration, being practically the same in the two communities, is unlikely to affect the difference between average durations. We also find that in order to calculate the average durations we have to assume a mean value for the duration interval 45 years and over. If, for example, we assume that this mean value is 55 years we get average durations of marriage equal to 13.1 and 14.7 years in the governorates and the provinces respectively. The mean value of 55 years, though plausible, may seem rather arbitrary. However, since there exists a larger proportion of marriages of duration 45 years and over in the provinces, a lower limit for the difference between the two averages can be obtained by differencing the average durations for marriages that lasted less than 45 years up till the census. The latter difference is found to be 1.3 years. (The averages for marriages of duration below 45 years are 12.9 years in the governorates and 14.2 years in the provinces.)

Thus, while the rural section of the population has an average excess of over 1.3 years of married life for each marriage that existed in 1947, it has produced an excess of at most .1 children on the average during that marriage. Needless to say, the two figures do not show any excess in rural fertility over that of the urban areas.

One should be careful, however, in interpreting these figures, since the above argument ignores the differences in age distribution of married women in the two sections of the population.

This difficulty can be avoided by examining an urban and a rural community, Alexandria and Sharkia, where only slight differences exist between age and duration distributions of married women in the two communities. The age distributions are as shown in Table 6. The effect of the slight discrepancy between the two distributions on reproduction can be figured by calculating a standardized average number of children per cur-

| AGE | PERCENTAGE AGE DISTRIBUTION | |
|-------------|-----------------------------|---------|
| | Alexandria | Sharkia |
| Under 20 | 6.7 | 5.4 |
| 20-29 | 33.9 | 33.3 |
| 30-39 | 31.0 | 31.4 |
| 40-49 | 17.9 | 18.8 |
| 50 and Over | 10.5 | 11.1 |

Table 6. Percentage age distribution by age of women in Alexandria and Sharkia.

rent marriage in 1947 in each of the two communities. This can be done by weighting the frequency in each age interval by the average number of children born to women in the same interval in the whole country, as given by Table 5. This procedure will give standardized averages equal to 3.51 in Alexandria and 3.64 in Sharkia. The age distribution in Sharkia is thus favorable to an excess of .1 children per married woman if the women in the two communities are reproducing at rates equal to those of the whole country.

Moreover, the distributions of the same women according to marriage duration are practically identical. (Table 7.) When the two distributions are weighted by the average number of children per marriage in the whole country for each duration,

Table 7. Percentage distribution of women in Alexandria and Sharkia by duration of marriage.

| MARRIAGE DURATION | PERCENTAGE DISTRIBUTION | |
|-------------------|-------------------------|---------|
| | Alexandria | Sharkia |
| 0-4 | 26.5 | 25.0 |
| 5-9 | 20.6 | 20.5 |
| 10-14 | 15.4 | 16.5 |
| 15-19 | 12.3 | 12.7 |
| 20-24 | 11.3 | 10.2 |
| 25-29 | 5.7 | 5.9 |
| 30-34 | 4.6 | 4.9 |
| 35-39 | 1.7 | 1.7 |
| 40-44 | 1.4 | 1.7 |
| 45 and Over | .6 | 1.0 |
| TOTAL | 100.1 | 100.1 |

as given by Table 4, the resulting standardized average number of children per marriage is found to be 3.43 in Alexandria and 3.49 in Sharkia, which are very nearly equal; the duration distribution in the latter being favorable to a very slight excess in reproduction.

We thus have for comparison an urban and a rural community both of which are reasonably large (Alexandria had 153,594 women of given marriage duration in 1947 while Sharkia had 248,180) and which have nearly the same age and duration distributions. The data on reproduction in the two communities give the averages of 3.59 and 3.23 children per married woman in Alexandria and Sharkia respectively.⁴ When we consider that the slight discrepancies between the age and duration distributions favor higher reproduction in Sharkia, we find it hard to avoid coming to the conclusion that the two figures obtained on average reproduction do not support the presumption of lower marital fertility of women in urban than in rural areas.

Attention may now be turned to comparison of reproduction in the governorates and the provinces. Here we find that the duration of marriage is favorable to larger reproduction in the provinces. This is indicated, as said before, by the excess duration of more than 1.3 years in the former. It is also demonstrated very clearly by the percentage distributions of married women in 1947 according to their duration of marriage (Table 8), where the governorates obviously outrank the provinces with respect to proportion of recent marriages, *i.e.* those contracted within the previous ten years.

One can assert further that marriage duration is favorable to higher reproduction in the provinces by calculating the stand-

⁴ The two averages are adjusted for the insertion of some women actually belonging to the zero children category in the "number of children not given" category. The adjustment was to shift the same percentage as was adopted before for the whole country from the latter category into the former. The average for Sharkia would be reduced—and the difference between the averages in the two communities would consequently be increased—if we shift a higher percentage in the case of Sharkia to allow for the observed higher percentage of women with "number of children not given," which is equal to 16.8 per cent as compared to 13.0 per cent in Alexandria.

| MARRIAGE DURATION | PERCENTAGE DISTRIBUTION OF MARRIED WOMEN | |
|-------------------|---|-----------|
| | Governorates | Provinces |
| 0-4 | 28.1 | 23.4 |
| 5-9 | 21.0 | 19.1 |
| 10-14 | 15.1 | 15.7 |
| 15-19 | 11.7 | 13.0 |
| 20-24 | 10.4 | 11.3 |
| 25-29 | 5.8 | 6.5 |
| 30-34 | 4.4 | 5.6 |
| 35-39 | 1.7 | 2.2 |
| 40-44 | 1.3 | 2.0 |
| 45 and Over | .6 | 1.2 |
| TOTAL | 100.1 | 100.0 |

Table 8. Percentage distribution of married women by duration of marriage, in the governorates and provinces of Egypt, 1947.

ardized average number of children per married woman that would result if the women given by the above two distributions were reproducing at the rates given by Table 4 for married women in the whole country. The standardized averages are found to be 3.34 in the governorates and 3.67 in the provinces.

Let us now compare the age distributions of married women in 1947 in those two sections of the population. The percentage distributions are as shown in Table 9. If the reproduction rates are the same then one would expect the age distribution in the provinces to be favorable to higher reproduction because it has a larger proportion of women aged 30 and over. The evidence is strengthened when we weight the above proportions by the average number of children per woman in each age group, as given by Table 5, and get the standardized averages of 3.40 in the governorates and 3.71 in the provinces.

To summarize the available information: On the one hand, when we standardize the number of children per marriage in the urban and rural sections by means of weights obtained from the reproduction of the two communities together, we find that, other factors affecting reproduction remaining equal, age and duration distributions acting separately are each favor-

| AGE | PERCENTAGE DISTRIBUTION OF MARRIED WOMEN | |
|-------------|---|-----------|
| | Governorates | Provinces |
| Under 20 | 8.06 | 5.44 |
| 20-24 | 16.98 | 13.24 |
| 25-29 | 18.72 | 18.17 |
| 30-34 | 15.79 | 16.17 |
| 35-39 | 14.21 | 15.28 |
| 40-44 | 10.34 | 11.38 |
| 45-49 | 6.80 | 8.30 |
| 50-54 | 4.87 | 5.75 |
| 55-59 | 1.90 | 2.62 |
| 60-64 | 1.48 | 2.14 |
| 65 and Over | .86 | 1.52 |
| TOTAL | 100.01 | 100.01 |

Table 9. Percentage age distribution of married women in the governorates and provinces of Egypt, 1947.

able to an excess of .3 children per marriage in the rural section. On the other hand, data on reproduction show an excess not larger than .1 children with a standard error less than .005 in the latter section. Thus these results fail again to support the assumption of higher fertility of married women in rural than in urban Egypt.

The same story is repeated when we compare Cairo with the rest of the country. Again we find that married women in Cairo are younger and that the difference in age distribution leads to a deficiency there equal to .34 children per marriage if the rates for the whole country are applied. (The standardized averages there are 3.35 in Cairo and 3.69 in the rest of the country.) We also find the duration of current marriage shorter in Cairo, leading to a deficiency of .36 children per marriage when the frequencies in each duration are weighted by the rates of the whole country. (The standardized average number of children in this case is 3.29 in Cairo and 3.65 elsewhere.)

Thus, while the differences in age and duration distributions lead to deficiencies in Cairo of .34 and .36 children per marriage respectively if the rates for the whole country are applied, data

on reproduction show a deficiency of only .09 children per marriage there. (The average number of children per marriage is 3.58 in Cairo and 3.67 elsewhere.)⁵ The remaining part of the deficiency, namely over .2 children per marriage, could not be accounted for if Cairo had lower fertility than the rest of Egypt.

The results so far obtained can be summarized as follows: Unless the degree of understatement of the number of children ever born to rural women was higher than that among urban women, there is nothing in the available census material to support the assumption that fertility of married women is lower in urban than in rural Egypt.

DIFFERENTIAL FERTILITY BY OCCUPATION

As already stated, the 1947 census tabulations on fertility do not include the occupation of the father. However, owing to the importance of this question which might indicate the prospects of growth within the different classes and whether any class is practicing fertility limitation in any form, use will be made here of a table published in the 1947 *Vital Statistics* entitled "Live births by order and occupation of father." The table includes fathers of the 352,000 births of known order that took place during 1947 in the Health Bureau areas.

It goes without saying that the data given by such a table do not represent absolute fertility because they pertain to the reproduction of a group of married men who had births in a certain year—thus excluding the childless. Even with respect to relative fertility, the table ignores the possible class differences in interruption of married life by widowhood, divorce, and separation. One must also be aware of the uncertainty, in some of the cases, as to whether the reported order of birth was based upon the aggregate offspring of the father rather than upon those born during the current marriage only. Besides, there is

⁵ The frequency in the zero children category was adjusted, as before, by adding to it, in each of the two communities, the same percentage of women with "number of children not given" as was adopted before for the whole country. The average number of children in the rest of Egypt and its difference from that in Cairo will both be reduced if a higher percentage is adopted in the case of the rest of Egypt to allow for the observed higher percentage of women with "number of children not given," which equals 14.2 per cent as compared to 12.2 per cent in Cairo.

evidence that the frequencies of births of first and second order, as given by the table, are below reality in all occupational groups. However, we will attempt here to condense the information supplied by the table and then draw whichever conclusions that seem safe.

The 76 occupations given in the original table have been condensed for the purposes of this study into ten occupation groups. Each group was designed to include occupations of the same general nature and to increase the likelihood that the person had spent all his reproductive life in the same group. The ten broad occupation groups are as follows:

1. Agricultural laborers. Those include the paid laborers as well as those who cultivate their own land or that of the members of their families.
2. Nonagricultural laborers. This category has by far the widest variety of employments. Besides all sorts of manual non-agricultural laborers, the group contains drivers, coachmen, sailors, nurses, porters, shop assistants, peddlers, waiters, and servants.
3. Policemen and messengers.
4. Merchants. This category includes all kinds of traders, commission agents, brokers, auctioneers, and contractors.
5. Religious employees. All kinds of priests, preachers, mosque and church assistants, and Moslem judges were grouped together in order to form a category which could be presumed to be virtually noncontraceptive.
6. Teachers.
7. Lawyers, prosecutors, and judges.
8. Journalists, authors, actors, and musicians.
9. Administration officers, comprising clerks, computers, secretaries, supervisors, and top officials, both in civil service and in private business.
10. Engineers, doctors, officers, and technicians.

The occupations under 10 were combined because they were found to possess very similar reproduction and also because they have similar economic and educational standards. Occupations 6, 7 and 8 were left separate despite their comparatively

| OCCUPATION GROUP OF FATHER | NUMBER OF FATHERS OF 1947 BIRTHS | AVERAGE NUMBER OF CHILDREN EVER BORN TO 1,000 FATHERS OF 1947 BIRTHS | STANDARD ERROR OF THE AVERAGE |
|--|----------------------------------|--|-------------------------------|
| 1. Agricultural Laborers | 65,294 | 3,899 | 10 |
| 2. Nonagricultural Laborers | 156,113 | 3,879 | 7 |
| 3. Policemen and Messengers | 14,992 | 3,951 | 20 |
| 4. Merchants | 53,860 | 4,105 | 11 |
| 5. Religious Employees | 2,056 | 4,407 | 60 |
| 6. Teachers | 5,562 | 4,124 | 33 |
| 7. Lawyers, Prosecutors, and Judges | 574 | 3,814 | 99 |
| 8. Journalists, Authors, Actors, and Musicians | 725 | 3,852 | 88 |
| 9. Administrative Officers | 31,927 | 3,806 | 14 |
| 10. Engineers, Doctors, Officers and Technicians | 4,607 | 3,455 | 33 |

Table 10. Differential reproduction by father's occupation.

small sizes because they had distinct reproduction which would be obscured if they were added to group 9 or 10.

A number of minor occupations appearing in the original table and comprising 15,022 individuals were not included in the condensed groups 1-10 for one of the following reasons: (1) Two or more heterogeneous employments were grouped together under one title in the original table. An example of this is the grouping of teachers of penmanship and Koraan in the villages together with the teachers of athletics, music, and dancing in the regular and higher schools. Another example is that of the guards who can be either urban or rural. (2) The members of an occupation are known to be advanced in age and yet cannot be attached to any of the major employments. Examples of this case are village mayors, tribal chiefs, and landlords. Another 1,568 births were added to the excluded group because the father or his occupation was unknown.

The reproduction of these occupation groups is given in Table 10 where the average number of children is calculated by averaging the orders of children born in 1947 for each group.

It is obvious that since all fathers under consideration belong to Health Bureau areas, the occupational distribution in the table is not representative of the whole country. Consequently, no total rates are presented.

If we assume similar accuracy of reporting among agricultural and nonagricultural laborers, we come to the interesting result that the reproduction of the two groups is practically the same. The observed difference of 20 children per thousand fathers has a standard error of 11.4 and cannot therefore be considered significant. The policemen and messengers, for whom the accuracy of reporting is not likely to differ greatly from the two groups of laborers, showed significantly higher reproduction. All or part of this excess may have arisen from difference in age.

When we compare the reproduction of the well educated groups—6, teachers; 7, lawyers, prosecutors, and judges; 8, journalists, authors, actors, and musicians; 9, administrative officers; and 10, engineers, doctors, officers, and technicians—who are all expected to have the same accuracy of reporting, we notice at once the very significantly higher reproduction of the teachers. It seems unlikely that the observed excess is attributable to differences in age because the teachers include the large group of young primary school teachers.⁶ One might suspect that the reproduction of this group was inflated by the presence of the school administrative staff. Yet this suspicion does not seem to be justified because the occupation group of administrative officers (group 9 in Table 10), to which the school administration staff naturally belong, indicates a much lower reproduction than that of the aggregate group of teachers and administrative officers in schools. Next, and significantly lower in reproduction than the teachers and any of the groups 1-5, we find the three groups—7, lawyers, prosecutors, and judges; 8, journalists, authors, actors, and musicians; and 9, adminis-

⁶ It was not possible to check the accuracy of this statement by means of the census age distributions because those distributions include all persons working in education, medicine, law, etc., a large number of whom are outside the occupations under consideration.

trative officers. The differences between the three groups were not significant. The reproduction of the tenth and final group, namely engineers, doctors, officers, and technicians is very significantly lower than that of any other group in the table. The observed difference between the last four groups, namely 7-10, and any other group in the table, except the teachers, should be even more significant if the tendency to leave out the dead children or to mention only those born during the current marriage decreases with education. However, one cannot deduce, without further evidence, that the low reproduction groups are deliberately practicing fertility control. Late age at marriage, because of extended education, may be a major factor in the observed lower reproduction.

Table 10 shows that the reproduction of religious employees is very significantly higher than any other group. They are followed by the merchants who again are significantly higher than the groups 1-3 and 7-10. The excess in reproduction of the religious employees and merchants over the educated groups 7-10 is, in all probability, true because difference in accuracy of reporting all children, live or dead, born during the current or previous marriages would still add to this excess. The observed excess cannot be conclusive, however, when we compare the reproduction of those two groups with that of the non-educated groups 1-3, because it may have arisen from better reporting among religious employees and merchants.

COMPLETED REPRODUCTION OF A MARRIED WOMAN

We shall estimate here how many births a married woman will have when she terminates her reproductive period in marriage. The census data give an average of 5.9 children born during the current marriage to women aged 45 and over in 1947. This figure does not represent the full number of progeny because it pertains to current marriages only, thus excluding the offspring by previous marriages. Steps (a) and (b) of the following procedure, which are adopted to estimate the reproduction in previous marriages, lead to the following estimated

percentage distribution of married women aged 45 and over according to civil status before their current marriage: 68.1 never married before, 24.4 divorced, and 7.5 widowed. It is thus 31.9 per cent of married women aged 45 and over who have had previous marital experience. The previous reproduction of the latter women should be estimated and pooled with the reproduction from current marriage of all married women aged 45 and over in order to estimate the completed reproduction of a married woman. This reproduction in previous marriages will be estimated as follows:

(a) The age at marriage for married women in each age interval above 45 years is calculated from the 1947 census table which distributes married women by age and duration of marriage. For example, the 80,511 women of age 50-54 and duration 30-34 were aged 15-24 at the beginning of their current marriage.

(b) By using the 1947 vital statistics table which distributes the women married in 1947 by age and civil status before marriage and assuming that this table represents approximately the status of women included in the table mentioned in (a) at the beginning of their current marriage, we can calculate the distribution according to civil status before the current marriage of the women aged 45 and over in each age-duration cell in the table referred to in (a). For example, the vital statistics table distributes the women married at ages 15-24 as follows: 88 per cent never married before, 11 per cent divorced and 1 per cent widowed. These percentages will give the distribution of the above mentioned 80,511 women of age 50-54 and duration 30-34 according to their civil status before their current marriage.

(c) For every duration-age cell in the table referred to in (a) we have thus far estimated the number of women married after divorce or widowhood and calculated their ages at the beginning of their current marriages. We proceed now to calculate their previous reproduction. This will be estimated for those married after divorce from the 1947 table which distributes the divorced women remarried in 1947 by age and number of children from previous marriages. (Table 11.) Given the

age of the divorced woman at remarriage and adopting the above averages as estimates of her previous reproduction, we can calculate the cumulative reproduction from previous marriage of married women in 1947 who were divorced before their current marriage. For example, the above mentioned $80,511 \times .11$ married women of duration 30-34 and age 15-24 at the beginning of their current marriage who were divorced before that marriage will have a previous reproduction equal to $80,511 \times .11 \times .18$ where .18 is the average given by the table for the age interval 15-24.

It was not possible to find information in the published statistics that would throw light on the previous reproduction of women who were widows before their current marriage. Vital statistics, for example, do not include a table similar to the one utilized in the preceding paragraph to estimate the reproduction of previously divorced women. It is obvious, however, that there is no reason for expecting their previous

Table 11. Number of divorced women remarried in 1947 by age and average number of children from previous marriages.

| AGE | NUMBER OF DIVORCED WOMEN REMARRIED IN 1947 | AVERAGE NUMBER OF CHILDREN FROM PREVIOUS MARRIAGES |
|-------------|--|--|
| 15-19 | 3,180 | .08 |
| 20-24 | 16,801 | .20 |
| 25-29 | 22,241 | .41 |
| 30-34 | 12,228 | .71 |
| 35-39 | 19,258 | .85 |
| 40-44 | 10,131 | 1.16 |
| 45-49 | 4,766 | 1.42 |
| 50-54 | 2,288 | 1.60 |
| 55-59 | 808 | 1.79 |
| 60-64 | 278 | 1.97 |
| 65 and Over | 27 | 2.30 |
| ALL AGES | 67,174 | .56 |

The reader will notice that the averages provided by this table are low compared to those of currently married women of the same ages. This is due to: (1) Most of the divorced women have no or very few children. For instance, of the women divorced in 1947, 75 per cent had no children during their last marriage. This proportion ranged from 95 per cent in ages 15-19 to 65 per cent in ages 70-74. (2) An unmarried woman with no or few children is more likely to get remarried than one who has numerous children. (3) The women included in the table have not been reproducing during the period between the two marriages. (4) It is quite possible that the number of live children rather than that of children ever born was reported in some cases. This error is of unknown extent but it is not likely to affect the average completed progeny of married women calculated by averaging the pooled reproduction of all marriages.

reproduction to be lower than that given in Table 11 for divorced women. In fact, one would expect previous reproduction to be higher in the case of widows since the contributing factor in divorce, namely childlessness or few children, does not apply to widowhood. Therefore, by following the same procedure as in the preceding paragraph, we can calculate a figure which is in all probability not higher than the reproduction of previously widowed women in each age-duration cell from their preceding marriages. We can also obtain an upper limit of their previous reproduction by treating them as if they had passed the whole interval between the dates of their previous and current marriages with their deceased husbands. For example, according to this assumption, the above mentioned 80,511 women of duration 30-34 and age 15-24 at the beginning of their current marriage have a total previous reproduction equal to $80,511 \times .01 \times .95$, where .95 is the average reproduction of married women in 1947 in the age interval 15-24.

We finally have access to the following information on the progeny of married women aged 45 and over: (1) total reproduction in current marriage, (2) estimated total reproduction in previous marriage broken by divorce, (3) two estimated limits of the total reproduction in previous marriage broken by death of the husband. By pooling the three kinds of reproduction we finally find that a woman who terminates her reproductive period in marriage has an average completed reproduction between 6.2 and 6.4 children.

CONCLUSION

The tables on reproduction, marriage duration, and age of married women in Egypt, supplied for the first time by the 1947 census, are undoubtedly a contribution to the study of fertility in Egypt. The tables are by no means adequate, however, when utilized to investigate differential fertility among sections of the population. The shortage of data necessitated the use of rather crude and lengthy procedures in this paper in order to secure some evidence of class fertility differentials. It would

have helped this study considerably if the number of children were cross-classified in the census by age of mother and duration of current marriage, for broad geographic regions as well as for occupation groups of the father.

No evidence was found in the census or vital statistics data to support the assumption of lower fertility in urban than in rural Egypt. Reproduction was found to be lower to some extent among a limited number of educated people in urban areas. On the average, a woman terminating her reproductive period in marriage was found to have had between 6.2 and 6.4 children.

The published data showed clearly that there were major problems in the execution of the census. It was found that in numerous cases the enumerators simply failed to insert a mark denoting zero children and hence necessitated classification as "not given." It was also obvious that in an incredibly high percentage of the cases the census information was supplied by a neighbor or some person outside the family. This is clear from the fact that while over 10 per cent of the durations and 14 per cent of the numbers of children were not given, ages were lacking for only 3 per thousand of the women. Such errors in data collection not only reduce the amount of the available information but also give rise to serious hazards in interpretation.

REFERENCES

1. 1947 Census of Egypt. Government Press, Cairo, 1953.
2. 1947 Vital Statistics of Egypt, Government Press, Cairo, 1952.
3. El-Badry, M. A.: Some Demographic Measurements for Egypt. *Milbank Memorial Fund Quarterly*, xxxii, No. 3, July, 1955, pp. 268-305.
4. 1950 United States Census of Population, Special Report P-E No. 5C-Fertility. United States Bureau of the Census, 1955.