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CHAPTER 8

ESTIMATING EXCESS BIRTHS DUE TO UNWANTED FERTILITY IN EGYPT

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SECTION I. INTRODUCTION :

Births are considered unwanted if they occur after a woman has reached the point at which she does not wish to continue childbearing. All other births are considered wanted. Estimates of wanted fertility are of interest because they provide an indication of the extent to which fertility would be reduced if women were completely successful in implementing their preferences for stopping childbearing (Bongaarts, 1990).
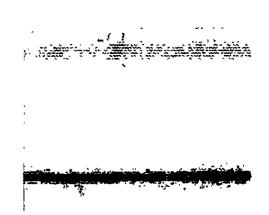
Egypt achieved remarkable success in promoting contraception. The percentage of married women using contraceptive methods increased from 24 % in 1980 to 47.1 % in 1992. Increasing contraceptive prevalence rate above the recent level became more difficult than before. An attempt to control and decrease unwanted fertility may be a suitable alternative to achieve more success in the field of promoting contraception.

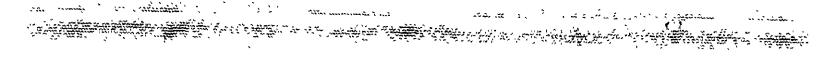The Study is organised to accomplish the following objectives :

(1)   Estimating and examining the trend in natural fertility, total fertility, wanted fertility and unwanted fertility in Egypt, 1980-91.

(2)   Estimating excess births due to unwanted fertility in Egypt, 1980-91.

(3)   Estimating the total fertility rate and crude birth rate in the absence of unwanted fertility in Egypt, 1980-91.

More specifically the Study aims to answer the following questions:

(1)   What would the total fertility rate (TFR) have been if all unwanted births were eliminated ?

(2)   What would the crude birth rate (CBR) have been if all unwanted births were eliminated ?
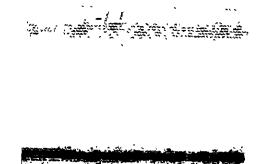
(3)   What is the number of births that occurred due to unwanted fertility in 1980 and 1991?

The analysis to be carried out in this Paper is based on data from the 1980 Egyptian Fertility Survey (1980 EFS) conducted by CAPMAS as part of the World Fertility Survey, and 1991 Egyptian Maternal and Child Health Survey (1991 EMCHS) which was conducted by CAPMAS and the League of Arab States as part of Pan-Arab Project for Child Development (PAPCHILD). Births that occurred in the three years preceding the survey will be used in the calculation of all fertility measures in both 1980 and 1991 surveys. Each of the two surveys include data on fertility intentions and desire for additional children.

Following this introductory section, this Paper is organised in four sections. Section II describes the methodology used in the study. Section III focuses on estimating and examining the trend in fertility between 1980 and 1992. Section IV estimates excess births due to unwanted fertility. The conclusion and policy implications of the Study are given in Section V.

SECTION II. METHODOLOGY :

The methodology that will be used to estimate excess births due to unwanted fertility and the Crude Birth Rate (CBR) in the absence of unwanted births is developed by the researcher, while the methodology of estimating wanted total fertility rate was developed by Bongaarts (1990 & 1992).

2.1 Estimating Unwanted Fertility

Since the observed total fertility rate is the sum of its wanted and unwanted components it can be presented mathematically as follows:

$$F = WF + UF \qquad (1)$$

where:

F = Total Fertility Rate

WF = Wanted Total Fertility Rate

UF = Unwanted Total Fertility Rate.

Unwanted fertility is in turn a function of the difference between supply and demand, NF-WF, and the degree of preference implementation:

$$UF = (NF\text{-}WF) * (1\text{-}PI) \qquad (2)$$

where:

NF = Natural Total Fertility Rate

PI = Index of Preference Implementation.

a) Natural Fertility

The estimated Natural Fertility Rate can be observed from the relationship between NF and observed fertility which can be summarized in the following formula:

$$NF = F / C \quad \bullet \qquad (3)$$

where C is an index between 0 and 1 that measures the proportional reduction in

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natural fertility attributable to deliberate birth control, it is estimated using the following equation:

$$C = 1 - 1.02 \times U \qquad (4)$$

where U represents the proportion practicing contraception among married women.

b) Wanted Fertility

The preferred approach for estimating the Wanted Fertility Rate (WF) is the one proposed by Bongaarts (1990). It relies on the following equation:

$$WF = WMTFR + 1.09 - WM(40\text{-}44) \qquad (5)$$

Where:
WMTFR="Want more" TFR, which equals the TFR that results after deleting all births to women who want no more children at the time of the survey.
WM(40-44)=Proportion of married women aged 40-44 who want more births.

c) Index of Preference Implementation

Preference Implementation is measured by an index with values ranging between 0 and 1. The level of implementation is the net result of a decision-making process in which couples weigh the cost of fertility regulation and the cost of unwanted childbearing. With full preference implementation (PI=1) no unwanted births occur and actual fertility equals wanted fertility (F=WF). At the other extreme, with no preference implementation (PI=0) observed fertility equals natural fertility.

Index of Preference Implementation can be estimated using the following equation:

$$PI = (NF - F) / (NF - WF) \qquad (6)$$

2.2 Wanted Crude Birth Rate

Since the observed Total FFertility Rate is divided to its wanted and unwanted components, the observed Crude Birth Rate (CBR) can be divided also by the same weight using the following formula:

$$WCBR = (WF / F) * CBR \qquad (7)$$

where:

WCBR = Wanted Crude Birth Rate

WF = WantedTtotal FertilityRrate

F = Total Fertility Rate

CBR = Observed Crude Birth Rate

The unwanted Crude Birth Rate in this case will be calculated using the following equation:

$$UCBR = CBR - WCBR \qquad (8)$$

2.3 Excess Births

Excess births due to unwanted fertility is calculated using the following formula:

$$EBUF = (UCBR * BIRTHS)/1000 \qquad (9)$$

Where:

ABUF= Excess births due to unwanted fertility

UCBR= Unwanted CBR

BIRTHS= Number of births occurred in the year of estimation

SECTION III. TREND IN FERTILITY :

This section focuses on examining the change in the levels of total fertility rates, natural fertility, wanted fertility, unwanted fertility, and the index of preference implementation between 1980 and 1991.

3.1 Trend in Total Fertility Rate

The Total Fertility Rate is a useful summary measure of recent fertility levels. It is interpreted as the number of children woman would have on average at the end of her childbearing years if shewas to bear children during those years at the currently observed age-specific fertility rates.

3.2 Trend in Natural Fertility

Natural Fertility is defined by Henry (1961) as fertility in the absence of deliberate birth control. In practice, fertility may be considered natural if no contraception or induced abortion is used (Henry, 1979).

As shown in Table (1) Natural Fertility increased from 6.69 births per woman in 1980 to 8.22 births in 1991. Natural Fertility is affected by age at marriage, breastfeeding, and fecundability. Age at marriage tends to raise with socio-economic development while breastfeeding and abstinence decline. Differences in postpartum amenorrhea could explain most of the observed differences in Natural Fertility (Bongaarts & Potter, 1983).The increase in Natural Fertility may be attributed to the decline in breastfeeding and postpartum abstinence counteracted the effect of the raise of age at marriage. The mean duration of postpartum amenorrhea decreased from 12.1 months in 1980 to only 9.8 months in 1991 (Hosam-Eldin, 1994). The Mean Age at First Marriage increased from 17.3 years in 1980 to 18.8 years in 1991 (CAPMAS, 1983 & Abdel-Azeem, 1993). This observed rising trend in Natural Fertility is consistent with previous findings of 1988 (Osheba, 1992).

3.2 Trend in Wanted Fertility

Births are considered unwanted if they occur after a woman has reached the point at which she does not want more children because she has achieved her childbearing objectives (Bongaarts, 1992).
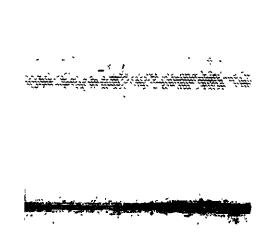
Wanted fertility dropped from 2.91 births per woman in 1980 to 2.09 births in 1991. This drop is attributed in part to the successful family planning program activities in Egypt. Now I can answer question number 1 that I raised in the introductory section:

What would the Total Fertility Rate (TFR) have been if all unwanted births were eliminated ?

The TFR is equal to the wanted Total Fertility Rate, that is 2.91 in 1980 and 2.09 in 1991. This fact may determine the minimum level of TFR that can be achieved in the future. One can conclude that TFR in Egypt in the coming years will not decline under the replacement fertility level (2.1 live births per woman).

3.3 Trend in Unwanted Fertility

As mentioned before, unwanted Total Fertility Rate is the difference between the observed TFR and the wanted TFR. Despite of the significant decline in TFR between 1980 and 1991, it is noticed from Table 1 that the unwanted TFR remained constant between 1980 and 1991 (2.13 and 2.14 live births respectively). This means that the proportion of unwanted fertility , in relation to the observed TFR, increased by time. It was 42.3% and 51.0% of the observed TFR in 1980 and 1991 respectively.

3.4 Trend in Preference Implementation

The value of PI chosen by couples determines where actual fertility falls within the range set by wanted and natural fertility. The implementation index rises as fertility regulation costs decline and its benefits (i.e. the elimination of unwanted births) rise.

The increase of the value of PI may be attributed, in part, to the family planning practice and the availability of medical services as well as the impact of media.

3.5 Relation Between Fertility Levels

-The relationship between fertility levels, namely, natural fertility, Total Fertility Rate, wanted fertility, and unwanted fertility is summarized in Figure (1). It is noticed from the figure that the gap between Natural Fertility and Total Fertility becomes wider with time. The difference between Natural Fertility and Total Fertility is the amount of fertility averted by birth control while the value of unwanted fertility is the amount of fertility that would be averted with complete implementation.

3.6 Comparison Between Egypt and Other Countries

Table (5) presents estimates of observed, wanted, natural, and preference implementation for Egypt 1980 and 1991 in addition to some other developing countries.

There is a substantial variation among countries in the level of fertility and its determinants. The highest Total Fertility Rate was observed in Mali (7.6), while the lowest was observed in Colombia (3.1). Egypt 1980 and 1991 lies in the middle.
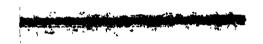
Wanted fertility ranged between 7 and 2. Egypt 1980 and 1991 has low levels of wanted fertility compared with other countries.

The variations in natural fertility were lower than observed and wanted fertility. Natural Fertility in Egypt 1980 was the lowest, while in 1991, it was one of the highest Natural Fertility Levels.

The value of the preference implementation for Egypt 1980 and 1991 lies in the middle between the developing countries.

SECTION IV. EXCESS BIRTHS DUE TO UNWANTED FERTILITY :

In this section the wanted and unwanted crude birth rate are calculated. The excess births due to unwanted fertility are calculated also.

4.1 Wanted and Unwanted Crude Birth Rate

The Crude Birth Rate decrease from 37.1 births per thousand in 1980 to 33.1 births in 1991. Now I can answer question number (2) that I raised in the introductory section:

What would the Crude Birth Rate (CBR) have been if all unwanted births were eliminated ?
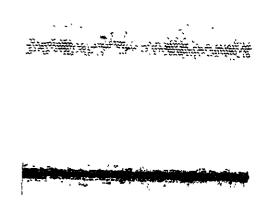
The Crude Birth Rate would be 21.7 births per thousand population in 1980 and only 16.4 in 1991. As shown in Table (3) the unwanted Crude Birth Rate increased from 15.8 in 1980 to 16.7 in 1991. This may be due to the fact that many families now favor small family size than before.

4.2 Excess Births due to Unwanted fertility

Excess births due to unwanted fertility in 1980 and 1991 are estimated in Table (3) depending on equation number (8). Now I answer question number (3) that I raised in section one:

What is the number of births that occurred due to unwanted fertility in Egypt, 1980-92?

The number of births that occurred due to unwanted fertility in 1980 was 663,662 births, increased to 900,863 births in 1991. This huge number of births comprises 42.1% of the total births occurred in 1980 and 50.5% of births occurred in 1991.

SECTION V. CONCLUSIONS AND RECOMMENDATIONS:

5.1 Conclusions

This Study examined the trend in fertility determinants and factors underlying the fertility change between 1980 and 1991 in the regions of Egypt. The analysis carried out in this study leads to the following conclusions:

First, There have been some progress in fertility decline over the period 1980-1991. The TFR declined from 5.04 in 1980 to 4.23 in 1991. Despite of the significant decline in TFR between 1980 and 1991, it is noticed from Table 1 that the unwanted TFR remained constant between 1980 and 1991 (2.13 and 2.14 live births respectively). This means that the proportion of unwanted fertility , if related to the observed TFR, increased by time.

Secondly, Wanted total fertility rate dropped from 2.91 in 1980 to 2.09 in 1991. Since Wanted Total Fertility Rate determine the minimum possible TFR in the absence of unwanted fertility, one can expect that TFR will not decrease under the level of 2.1 (the replacement fertility level) in the coming years.

Thirdly, In the absence of the effect of Unwanted Fertility, Crude Birth Rate would have been 21.7 births per thousand population in 1980 and only 16.4 in 1991.

Fourthly, The number of births that occurred due to unwanted fertility in 1980 was 663,662 births, which increased to 900,863 births in 1991. This huge number of births comprises 42.1% of the total births occurred in 1980 and 50.5% of births occurred in 1991.

5.2 Recommendations

In view of the findings of the Study, the following recommendations may emerge:

(1)   Given the high contribution of unwanted TFR to the observed TFR, effort

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must be directed toward declining unwanted fertility through increasing the family planning program effort to achieve low TFR level in the future.

(2)   Given the importance of preference implementation in the decline of fertility between 1980 and 1991, more efforts are needed to decrease the unwantedfertility through mass media and the availability of family planning services.

(3)   Given the importance of wanted fertility as a component of TFR, further research should be directed toward the study of the determinants of unwanted fertility.

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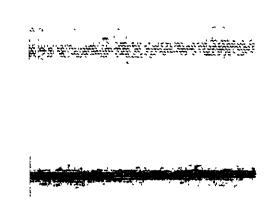Press, New York, 1983

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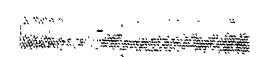
TABLE (1)
TREND IN FERTILITY IN EGYPT   1980-91

Year	NF (1)	TFR (2)	WF (3)	UF (4)	PI (5)
1980	6.69	5.04	2.91	2.13	.44
1991	8.22	4.23	2.09	2.14	.65
% Change	22.9	-16.1	28.2		47.7

Source: Computed from the clean tapes of 1980 EFS and
1991 EMCHS for three years before the surveys.

Note: (1) Calculated by equation No.3, Section II.
(3) Calculated by equation No.5, Section II.
(4) Calculated by equation No.2, Section II.
(5) Calculated by equation No.6, Section II.

TABLE (2)

ESTIMATES OF OBSERVED, WANTED, NATURAL FERTILITY, AND PREFERENCE IMPLEMENTATION FOR SELECTED COUNTRIES

	Observed Fertility	Wanted Fertility	Natural Fertility	Preference Implement. Index
Mali	7.6	7.0	7.8	0.25
Senegal	6.5	5.7	6.8	0.30
Kenya	6.4	4.3	8.2	0.45
Zimbabwe	5.2	4.3	7.5	0.71
Egypt (1980) *	5.0	2.9	6.7	0.44
Morocco	4.6	3.2	7.2	0.66
Egypt (1991) *	4.2	2.1	8.2	0.65
Tunisia	4.1	2.9	8.8	0.79
Peru	4.0	2.1	7.0	0.60
Colombia	3.1	2.0	8.5	0.82

Source: Bongaarts, J. (1992).

* Computed from the Clean Tapes of 1980 EFS and 1991 EMCHS.

TABLE ·(3)

ESTIMATION OF CRUDE BIRTH RATE, WANTED CRUDE BIRTH RATE, UNWANTED CRUDE BIRTH RATE, AND Excess BIRTHS DUE TO UNWANTED FERTILITY, EGYPT, 1980-91.

Year	CBR	WCBR	UWCBR	EBUF	% of Total Births
1980	37.5	21.7	15.8	663,662	42.1
1991	33.1	16.4	16.7	900,863	50.5

Source:Calculated depending on equations number (8&9) and Vital Statistics of 1980 and 1991.

FIGURE(1)
RELATIONSHIP BETWEEN FERTILITY LEVELS,
EGYPT, 1980-1991