Understanding Fertility Decline in Egypt

By
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1- Introduction

The Egyptian government policy objective, for long, have been to slow the growth rate of population. In 1975, the National Population Policy was articulated, focusing on four dimensions of Egypt's population problem: rapid growth, spatial mal-distribution, low-level characteristics, and uneven structure (NPC 1994 cited in Ibrahim 1995).

During earlier phases of Egypt's Population Program, significant achievements were accomplished showing the great success of the program especially in the area of family planning. These achievements continued and were reflected and measured by different indicators. For example, the total fertility rate dropped from 5.3 at the time of the 1980 EFS to 3.5 births per woman at the time of the 2000 EDHS and then decreased at a slower pace to 3.1 at the time of the EDHS 2005. In addition, the contraceptive prevalence increased remarkably from 24 percent in 1980 to 56 in 2000 then increased to 59 percent in 2005.

Despite of the success of the Family Planning Component of the National Population Program yet the Family Planning Program still faces challenges to meet it's primarily goal of achieving a full demographic transition to two children per family by year 2017.

This paper aims at studying and providing an insight understanding of the nature and pace of change in fertility in Egypt; both total fertility rate and martial fertility rate over the period between 1988 and 2005. In addition, the paper also investigates factors that influence fertility change in the country using Bongaarts Proximate Determinants Framework.

2- Data Utilized and Methods

This paper utilizes data that has been collected from the most recent Egypt Demographic and Health Survey (DHS 2005) and the series of earlier EDHS surveys that had taken place in Egypt. There are five full DHS surveys been conducted in Egypt since 1988, in addition to three interim surveys in years 1997,1998, and 2003. All eight EDHS surveys collected almost the same questions needed for fertility analysis. However, the paper utilizes the full scale EDHS data set to provide reliable detailed analysis, as the sample for the interim surveys is relatively smaller.

The EDHS 2005 included interviews with 21,972 Households, and a total of 19,474 ever married women. In the EHDS 2000, 16,957 households and 15,573 ever-married women were successfully interviewed. In the 1995 EDHS, the fieldwork yielded a total of 15,567 households and 14779 ever-married women. In the 1992 EHDS, the survey interviewed 10,760 households, and 9,987 ever-married women. Finally, a total of 9805 households and 8911 ever-married women were successfully interviewed in 1988.

The paper will include two main parts; **first** studying the following issues:

- The long-term trend in fertility and pace of change.
- How had fertility rates change at over the period immediately prior to the survey in Egypt and among different subgroups.

In this part of the analysis, the paper firstly provides a descriptive trend analysis of the TFR and TMFR by wealth index, education of women, urban-rural, and place of residence.

Second; using Bongaarts' Proximate Determinants Model, the paper then looks at the factors influencing fertility change in Egypt. The four main factors included in the model are; prevalence of marriage, use of contraception, use of abortion, and level of amount of postpartum infecundibility caused by breastfeeding and postpartum abstinence. The relative importance of each factor over time will be assessed.

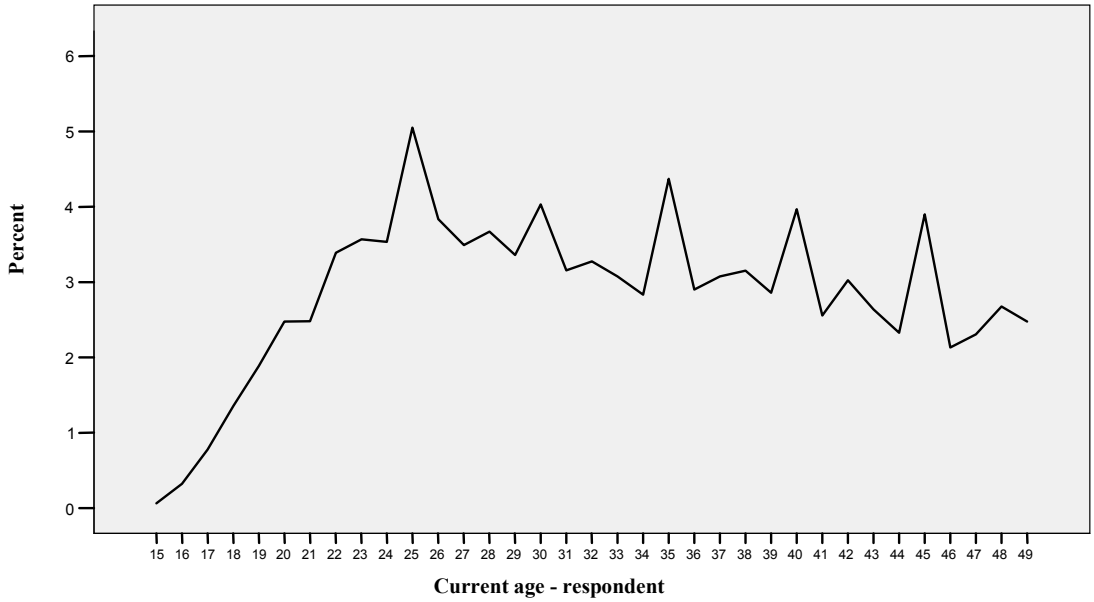
3- Objectives

This paper studies the change in the total Fertility Rate over time, as well as, the Marital Fertility Rate. It will also explore the decline in TFR and MTFR by wealth quintiles, education, and residence. It also attempts to understand in more depth how the overall TFR and TMFR are shaped by household's wealth, education of women, and residence. Finally, the paper assesses the change and investigates the determinants of TFR and the contribution of each factor to the reduction in TFR.

4- Data Quality

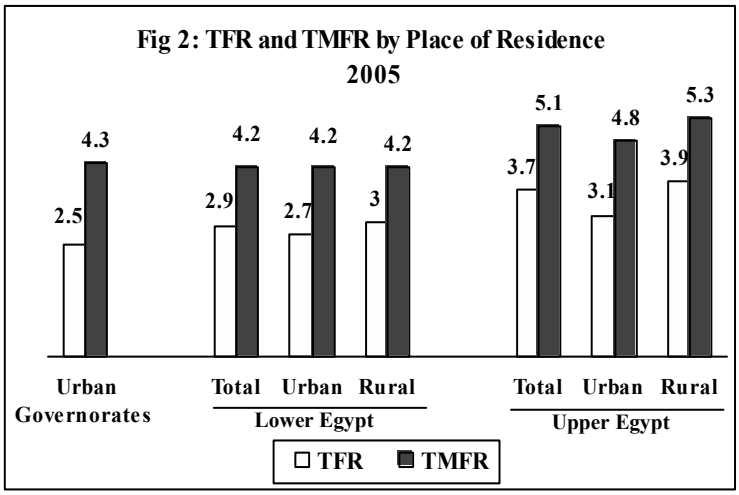
Fertility analysis is largely affected by the accuracy of age and date reporting for both women and children. There is evidence of age heaping (see Figure 1), however, it is less evidente than earlier surveys. Also, grouping women's age into five years categories will minimize further the impact of age heaping. Looking at Myers index (an overall measure of digit preference) for 2005, although there is obvious digit preference in 2005, particularly among women with no education and from the poorest wealth quintile the extent of digit preference is less than what was observed in 1992 and 1988 (see Mansour, Enas et al. 1995). For more details about data quality see Tables in the Annex.

Fig 1: Current age - respondent



5-Differentials in Current Fertility

As mentioned previousely, levels of TFR reached 3.1 births per woman in 2005. Looking at differentails by background characterisitcs in both TFR and TMFR, data showed that there are clear differences between urban–rural and regions in both TFR and TMFR. The lowest level of fertility was observed in Urban Governorates (2.5 births per woman) and the highest was observed in rural Upper Egypt (3.9 births per woman). Same pattern was observed for TMFR. However, the gap between TFR and TMFR is more than one births.



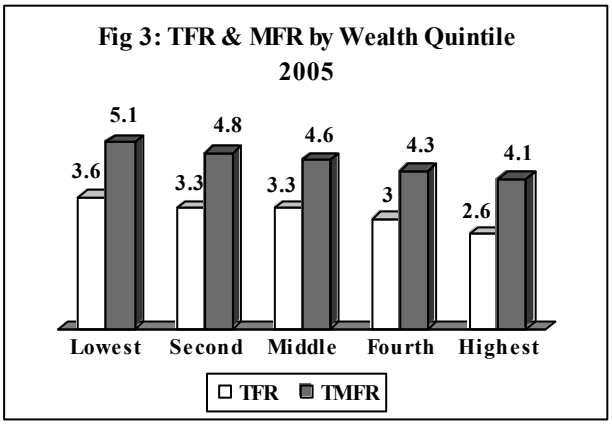
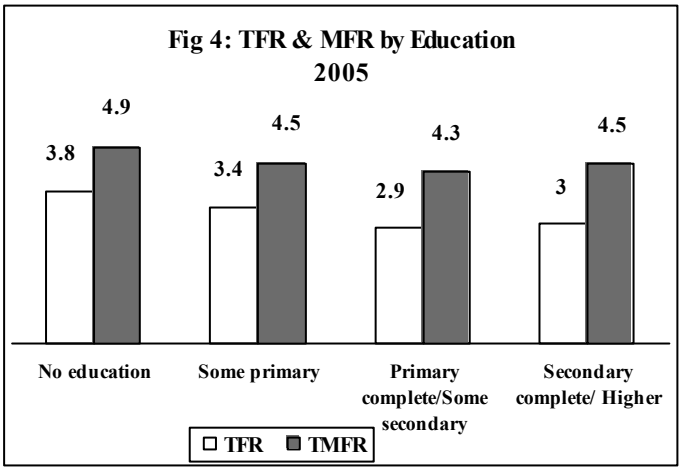


Figure 3 presents the current fertility by wealth quintiles. As expected TFR for women in the lowest wealth quintile is higher by one birth than women in the highest wealth quintile (3.6 births per woman compared with 2.6 births per woman respectively). Same pattern observed for martial fertility rate. The difference between the lowest wealth quintile and the highest in TMFR is one birth (5.1 birth and 4.1 birth respectively).

With regard to TFR by educational level, data confirms the fact that the difference in TFR is 0.8 birth between women with no education and women with secondary education or higher, however, the difference in TMFR between women with on education and those with secondary education or more is only 0.4 (4.9 births and 4.5 births respectively) (Figure 4).



6- Fertility levels and Trends

Figure 5 shows the decline that occurred in fertility over the period between 1988 and 2005. The total fertility rate fell to be 1.3 births during the period from a level of 4.4 births in EDHS 88 and 3.1 births in EDHS 2005. The decline in fertility was rapid in late 1980's up to mid 1990's, however, the pace of decline slowed with almost no change between 1995 and 2000 then accelerated again between 2000 and 2005. The marital fertility rate took the same pattern over the period under study.

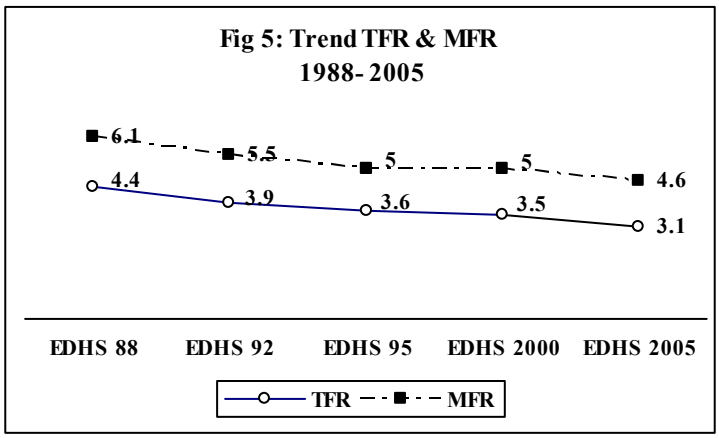
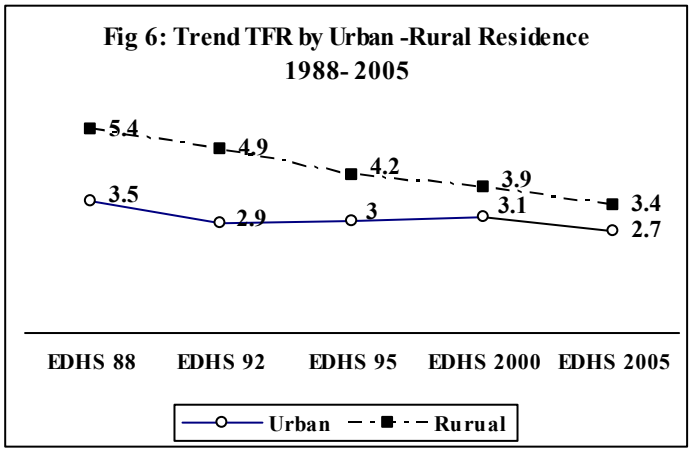


Figure 6 presents the trend in fertility by urban-rural residence over the period of 1988 and 2005 EDHS. The figure shows that fertility declined by around 23 percent in Urban areas during this period, while declined by around 37 percent in rural areas during the same period. The decline in urban areas happened between 1988 and 1992 to reach 2.9 births, then fertility leveled off at that point with a small rise in fertility up to the 2000 EDHS to reach 3.1 births. Then a significant decline was observed between 2000 and the 2005 EDHS to reach 2.7 births per woman . In rural areas, in contrast the decline in fertility continued over time from a level of 5.4 births in the 1988 EDHS to reach 3.4 births in the 2005 EDHS (2 births decline). It is clear from the figure that the gap in fertility level between urban and rural has been narrowed in recent years.



Based on the trend and differentials in both TFR and TMFR one can notice that the trend and differential in the two indicators took the same pattern. Accordingly, in the following section of the analysis the paper will concentrate on TFR.

Assessment of the recent change in fertility is important to understand the fertility pattern and decline in the future. First, long –term trends in fertility is examined, then recent change in fertility are examined by region, education ,and wealth.

6.1 Long-term Trends in Fertility by Background characteristics

Birth History Information was used to estimate TFR for up to 15 years (three five-years successive periods prior to the survey) using the birth history information for successive periods before the survey. Tables 1, 2 and 3 show the TFR for three to five-year periods prior

to the survey by background characteristics. Fertility rates are cumulated only up to age 34, because of the progressive truncation of data for older women as time before the survey increases.

The differentials in TFR decline are clear between urban and rural in Table 1. The TFR declined by 0.6 births during the 15-years preceding the survey while for urban areas the decline was only (0.2 births) during the same period. The change in fertility in both urban and rural was more clear in the recent 5 years than the period before. Also, it clear that the decline in fertility is larger among younger women that older women.

Table 1 Trend in Fertility

Trend in fertility rates, during the 15-years period preceding the survey, by urban – rural residence, Egypt 2005.

	Urban			Rural			Total Egypt		
Age group	**0-4**	**5-9**	**10-14**	**0-4**	**5-9**	**10-14**	**0-4**	**5-9**	**10-14**
15-19	28	35	56	62	74	103	48	57	83
20-24	146	161	193	207	234	254	181	203	228
25-29	179	197	192	208	225	248	196	213	221
30-34	123	128	90	133	155	124	129	142	107
35-39	60	62	[51]	65	83	75	63	73	64
40-44	17	[23]	-	21	28	36	19	26	38
45-49	[1]	-	-	4	13		3	9	
TFR 15-34	2.4	2.6	2.6	3.0	3.4	3.6	2.8	3.1	3.2

Table 2 presents the fertility rates by education level. The percentage of decline among women who received some primary education is around 30 percent while there is no change among women who completed secondary or higher.

Table 2Trend in Fertility by Education level

Trend in fertility rates, during the 15-years period preceding the survey, by education level, Egypt 2005.

	No education			Some primary			Primary through secondary			Completed secondary/higher		
Age group	**0-4**	**5-9**	**10-14**	**0-4**	**5-9**	**10-14**	**0-4**	**5-9**	**10-14**	**0-4**	**5-9**	**10-14**
15-19	110	121	176	81	106	167	30	93	92	73	20	15
20-24	239	265	307	227	249	327	217	217	223	217	159	133
25-29	205	233	249	188	226	265	211	191	189	211	200	178
30-34	125	155	117	132	135	108	139	115	91	139	138	96
35-39	72	78	74	56	70	63	78	64	50	78	68	50
40-44	18	25	26	19	32	65	21	29	38	21	23	48
45-49	3	13		5	0		7	19		7	0	
TFR 15-34	3.4	3.9	4.2	3.1	3.6	4.3	3.7	3.6	3.4	3.2	3.0	2.6

As shown in Table 3, the decline in TFR over the past 15 years was higher for lower wealth quintiles; the fertility declined by one-third among women in the lowest wealth quintile. However, this decline represent only 13 percent among women in the highest wealth quintile. No change was noticed in fertility among women in the fourth wealth quintile over the period under study.

Table 3 Trend in Fertility by Wealth Quintiles

Trend in fertility rates, during the 15-years period preceding the survey, by Wealth quintiles, Egypt 2005.

	Lowest			Second			Middle			Fourth			Highest			Total Egypt		
Age group	**0-4**	**5-9**	**10-14**	**0-4**	**5-9**	**10-14**	**0-4**	**5-9**	**10-14**	**0-4**	**5-9**	**10-14**	**0-4**	**5-9**	**10-14**	**0-4**	**5-9**	**10-14**
15-19	73	101	148	62	83	114	51	57	87	37	38	56	15	20	30	48	57	83
20-24	217	253	287	196	234	270	207	222	242	168	182	194	125	139	165	181	203	228
25-29	211	274	263	202	230	271	198	206	202	190	192	197	182	198	193	196	213	221
30-34	139	177	149	125	154	130	127	130	108	128	126	80	126	132	87	129	142	107
35-39	78	113	111	71	76	73	71	67	52	56	63	61	46	58	38	63	73	64
40-44	21	38	101	23	31	0	16	22	7	18	25	42	17	18	45	19	26	38
45-49	7	4		4	32		2	0		1	0		1	8		3	9	
TFR 15-34	3.2	4.0	4.2	2.9	3.5	3.9	2.9	3.1	3.2	2.6	2.7	2.6	2.2	2.4	2.4	2.8	3.1	3.2

6.2 Recent Trends in Fertility by Background characteristics

Levels and trends of fertility are examined in relation to the background characteristics. The common pattern of differentials in fertility is for fertility levels to be high when background characteristics level are low. For example, within country, poor or uneducated have higher birth rates than wealthier and educated groups. Table 4 shows an analysis of period of changes in fertility that documents the substantial decline in fertility that has been occurring in Egypt.

Trends by urban-rural

The Fertility had fallen from a level of 3.5 births in the period 3-5 years before the survey to only 3.0 births in the period 0-2 years before the survey. The absolute and relative decline in urban and rural are almost the same. The decline took place among all age groups except for the oldest age group (45-49), where fertility remained low and stable. The decline in fertility rates in the youngest cohorts was higher in rural than urban. Accordingly, the fertility levels between women living in urban and rural areas in Egypt is narrowed.

Table 4 Recent Fertility by Urban -Rural

Age-specific and cumulative fertility rates, for two 3-years period preceding the survey, by urban – rural residence, Egypt 2005.

	Urban		Rural		Total Egypt	
Age group	**0-2**	**3-5**	**0-2**	**3-5**	**0-2**	**3-5**
15-19	30	29	60	71	48	53
20-24	142	157	198	224	174	196
25-29	170	189	198	223	187	209
30-34	112	128	130	147	123	139
35-39	57	65	61	79	59	72
40-44	15	24	19	29	17	26
45-49	1	2	3	7	2	5
TFR 15-49	2.6	3.0	3.3	3.9	3.0	3.5
TFR 15-44	2.6	3.0	3.3	3.9	3.0	3.5

Trends by Region

The recent decline in fertility was noticeable in rural Upper Egypt, where rates had fallen from 4.6 births during the period 3-5 years before the survey to 3.9 births in the period 0-2 years prior to the survey, and in urban Upper Egypt (from 3.5 births to 3.0 births respectively). In other areas the decline was less; however it was substantial. The decline was about 0.3 births during the period under study in all the other areas.

Table 5 Recent Fertility by Region

Age-specific and cumulative fertility rates, for the two 3-years period preceding the survey, by urban – rural residence, Egypt2005.

Place of residence	Urban governorates		Lower Egypt						Upper Egypt						Total Egypt	
			Total		Urban		Rural		Total		Urban		Rural			
	0-2	3-5	0-2	3-5	0-2	3-5	0-2	3-5	0-2	3-5	0-2	3-5	0-2	3-5	0-2	3-5
15-19	21	20	41	47	20	27	46	53	65	75	43	41	75	90	48	53
20-24	118	130	176	192	148	158	186	204	198	232	172	195	212	250	174	196
25-29	160	184	177	201	173	169	179	211	209	230	181	210	223	241	187	209
30-34	103	117	112	121	108	131	113	117	144	169	126	142	154	185	123	139
35-39	52	62	45	63	48	61	44	64	77	88	67	72	83	98	59	72
40-44	16	20	14	21	12	21	15	21	20	37	15	31	23	39	17	26
45-49	0	4	1	1	1	2	1	0	4	11	3	0	4	16	2	5
TFR 15-49	2.4	2.7	2.8	3.2	2.5	2.8	2.9	3.3	3.6	4.2	3.0	3.5	3.9	4.6	3.0	3.5
TFR 15-44	2.4	2.7	2.8	3.2	2.5	2.8	2.9	3.3	3.6	4.2	3.0	3.5	3.8	4.5	3.0	3.5

Trend by Education

Looking at the recent decline in fertility by education level, one can notice that the decline in fertility rate was least among women who completed secondary or higher(0.2 birth). The highest decline was observed among women with primary through secondary, where fertility declined from a level of 3.6 births in the period 3-5 years prior to the survey to 2.9 births in the period 0-2 years prior the survey. In all education groups, fertility rates peak among women age 20-24, except for women with secondary or higher education , where fertility peaks at 25-29 age group.

Table 6 Recent Fertility by Education

Age-specific and cumulative fertility rates, for two 3-years period preceding the survey, by education, Egypt 2005.

Age group	No education		Some primary		Primary through secondary		Completed secondary/higher	
	0-2	3-5	0-2	3-5	0-2	3-5	0-2	3-5
15-19	114	114	83	93	38	78	38	22
20-24	220	250	205	240	145	211	145	163
25-29	204	220	190	205	190	195	190	207
30-34	114	145	131	129	127	119	127	141
35-39	67	80	58	60	53	68	53	67
40-44	17	25	14	32	19	31	19	24
45-49	2	6	4	5	1	10	1	0
TFR 15-49	3.7	4.2	3.4	3.8	2.9	3.6	2.9	3.1
TFR 15-44	3.7	4.2	3.4	3.8	2.9	3.5	2.9	3.1

Trends by wealth index

Table 7 presents the fertility rates for a 3-year period by wealth quintiles. The data indicated that fertility had declined among women in the lowest wealth quintile from a level of 4.3 births during the 3-5 years prior to survey to 3.5 births during the 0-2 years prior to the survey. The decline in fertility was also high among women in the second wealth quintile. The decline in fertility was at lower pace among other wealth quintiles and relatively unsubstantial, with the rate been falling by around 0.2 to 0.4 births in the other quintiles during the period under study.

Table 7 Recent Fertility by Wealth Quintiles

Age-specific and cumulative fertility rates, for two 3-years period preceding the survey, wealth index, Egypt 2005.

	Lowest		Second		Middle		Fourth		Highest		Total Egypt	
Age group	**0-2**	**3-5**	**0-2**	**3-5**	**0-2**	**3-5**	**0-2**	**3-5**	**0-2**	**3-5**	**0-2**	**3-5**
15-19	66	87	59	75	53	55	39	35	17	15	48	53
20-24	197	236	183	223	211	216	158	185	124	130	174	196
25-29	223	224	189	228	185	207	175	195	167	196	187	209
30-34	120	166	128	134	135	130	115	136	117	129	123	139
35-39	78	97	64	71	54	80	64	56	40	63	59	72
40-44	15	35	20	33	13	24	19	23	17	20	17	26
45-49	8	6	1	11	1	4	1	0	1	2	2	5
TFR 15-49	3.5	4.3	3.2	3.9	3.3	3.6	2.9	3.1	2.4	2.8	3.0	3.5
TFR 15-44	3.5	4.2	3.2	3.8	3.3	3.6	2.9	3.1	2.4	2.8	3.0	3.5

7- Determinants of Fertility

As discussed previously fertility rates had declined over time. However, to understand the trend in fertility decline Proximate Determinants Model developed by Bongaarts was used to calculate the four indexes in the model (delay in marriage “Cm”, use of contraception “Cc”, postpartum infecundibility “Ci” due to breastfeeding or abstinence, and abortion). Unfortunately, little high quality data are available on abortion, and since in Egypt there is negligible fertility out side marriage, accordingly, the model implicitly assumes there is no fertility impact from induced abortion (Ca=1).

Differentials in Proximate Determinants

Table 8 looks at the trends in the main proximate determinants of fertility for the main regions using data of the EDHS series of surveys (1988,1992, 1995, 2000, and 2005) i.e trends in marriage, contraceptive use, and postpartum infecundibility. The table shows that there were slight decline in the proportion of marriage over the past 15 years for most of the regions. However, the increase in median age at first marriage was more clear; specially in rural Lower Egypt and Upper Egypt. The greatest increase in age at first marriage was among rural women in rural Lower Egypt, where the age at first marriage increased from 17.6 years in 1988 to 20.0 years in 2005. There was an evident of increase in contraceptive use level among all subgroup over the study period. A striking change in current use was observed in rural Lower and Upper Egypt,(from 37 percent in rural Lower Egypt in 1988 to 66.5 percent in 2005, and from 11.5 percent in rural Upper Egypt in 1988 to 45 percent in 2005). A significant change was also observed in the other areas at much lower pace.

Table 8 Principal Proximate Determinants of Fertility

Marriage, contraceptive use and postpartum insusceptibility as proximate determinants of fertility , by place of residence, Egypt 1988, 1992, 1995, 2000 and 2005.

Place of residence	Urban Governorates	Lower Egypt			Upper Egypt			Total Egypt
		Total	Urban	Rural	Total	Urban	Rural	
Marriage								
Proportion married, women 15-49								
1988	58.8	65.9	64.8	66.3	69.0	63.8	72.2	65.1
1992	63.7	63.8	62.7	64.2	69.6	62.0	73.4	65.3
1995	76.6	71.6	78.4	69.1	53.8	61.9	50.8	65.1
2000	74.6	65.4	73.0	62.8	55.3	61.3	52.8	62.8
2005	75.6	64.4	74.9	61.3	55.7	64.9	52.2	62.1
Median age at first marriage, women 25-49								
1988	21.1	18.4	20.5	17.6	17.1	18.8	16.4	18.5
1992	21.1	19.1	20.8	18.5	17.9	20.5	17.2	19.2
1995	21.5	19.3	21.2	18.6	17.8	19.8	16.9	19.3
2000	21.7	19.2	20.9	18.5	18.4	20.7	17.4	19.5
2005	22.7	20.6	22.0	20.0	19.0	21.1	18.0	20.4
Contraceptive use								
Percentage currently using any method, married women 15-49								
1988	56.0	41.2	54.5	36.6	22.1	41.5	11.5	37.8
1992	59.1	53.3	60.3	50.5	31.4	48.1	24.3	47.1
1995	58.1	55.4	59.1	53.8	32.1	49.9	24.0	47.9
2000	62.7	62.4	64.9	61.4	45.1	55.4	40.2	56.1
2005	63.9	65.9	64.1	66.5	49.9	60.0	45.2	59.2
Postpartum insusceptibility								
Mean duration in months[1]								
1988	6.0	8.7	6.2	9.6	10.4	8.1	11.4	8.9
1992	6.3	7.3	5.9	7.8	9.0	7.1	9.6	7.9
1995	6.2	8.1	7.2	8.4	10.2	7.3	11.2	8.7
2000	6.9	6.5	5.6	6.9	8.6	6.2	9.4	7.4
2005	6.0	5.9	5.5	6.0	8.3	7.3	8.6	7.0

[1] calculated using the prevalence-incidence method in which the prevalence of Postpartum insusceptibility (the total number of women who were insusceptible) is divided by the incidence (the average number of births per month over the 36-month period).

Differences in mean duration of insusceptibility, reflect the differences in the length of breastfeeding and postpartum abstinence. Rural women from Upper Egypt were insusceptible to the risk of pregnancy for much longer period than women from other areas. With respect to change over the study period, rural upper Egypt exhibited the most change between 1988, and 2005. The mean duration of insusceptibility in rural Upper Egypt declined from 11.4 in 1988 to 8.6 in 2005, a decrease of almost three months.

Effects of the Proximate Determinants on Fertility

Table 9 presents the indices of marriage, contraceptive use, and postpartum infecundibility and the TFR and TF implied by the Bongaarts model for 1988, 1992, 1995, 2000, and 2005. Only abortion, which is generally assumed to be less important in determining fertility levels in Egypt and other Islamic countries, couldn't estimated using the EDHS data.

In interpreting the findings, it should be noted that the higher the value of the index ,the lower the percentage of reduction in fertility due to that index. The reduction in fertility between

1988 and 2005 is principally due to the use of contraception, then by delay in marriage. While the reduction due to postpartum infecundibility being less important. Overall Egypt, in all the five surveys under study, the effect of contraceptive use was greater than the effect of delay marriage.

Table 9 Proximate Determinants and Fertility Rates

Indices of marriage, contraceptive use and postpartum insusceptibility, and the TFR and TF implied by Bongaarts model, by place of residence, Egypt 1988, 1992, 1995, 2000 and 2005.

Proximate determinants/fertility rates	Urban governorates	Lower Egypt		Upper Egypt		Total Egypt
		Urban	Rural	Urban	Rural	
Proximate determinants						
Cm: index of marriage delay						
2005	0.487	0.541	0.623	0.546	0.648	0.583
2000	0.501	0.525	0.584	0.538	0.655	0.573
1995	0.511	0.532	0.581	0.609	0.718	0.598
1992	0.500	0.508	0.627	0.595	0.759	0.612
1988	0.477	0.593	0.681	0.608	0.748	0.629
Cc: index of Contraceptive use						
2005	0.329	0.325	0.299	0.371	0.527	0.378
2000	0.342	0.518	0.364	0.440	0.626	0.429
1995	0.382	0.372	0.440	0.490	0.768	0.504
1992	0.386	0.367	0.469	0.499	0.748	0.507
1988	0.416	0.432	0.628	0.569	0.881	0.606
Ci: index of Postpartum insusceptibility						
2005	0.817	0.835	0.815	0.776	0.737	0.784
2000	0.788	0.831	0.788	0.810	0.716	0.771
1995	0.808	0.778	0.745	0.774	0.673	0.736
1992	0.806	0.820	0.760	0.781	0.712	0.758
1988	0.816	0.810	0.712	0.752	0.669	0.730
Fertility rates						
Actual TFR						
2005	2.50	2.66	3.01	3.12	3.92	3.13
2000	2.89	3.05	3.31	3.39	4.66	3.53
1995	2.82	2.66	3.45	3.80	5.19	3.63
1992	2.69	2.80	4.10	3.58	5.97	3.93
1988	3.12	3.93	5.96	4.29	6.34	4.54
Implied TFR						
2005	2.00	2.24	2.32	2.41	3.85	2.64
2000	2.07	3.46	2.56	3.18	4.49	2.90
1995	2.41	2.36	3.91	3.54	5.68	3.40
1992	2.34	2.34	3.42	3.55	6.18	3.60
1988	2.48	3.17	4.66	4.98	6.75	4.26
Implied TF						
2005	19.1	18.2	19.8	19.9	15.6	18.1
2000	21.4	14.8	19.1	18.3	15.2	18.6
1995	17.9	19.4	17.4	17.9	13.5	16.3
1992	17.6	18.3	18.3	15.4	14.4	16.7
1988	19.3	18.9	16.3	16.5	14.8	16.3

Regarding regional patterns, the effects of delayed marriage and contraceptive use were relatively small in rural Upper Egypt compared with other regions. Looking at the effects of the proximate determinants with the region over time, one can notice that the reduction in

fertility due to delayed marriage in rural Upper Egypt was higher than the reduction due to contraceptive use in 1988, 1992, and 1995, by 2000 and 2005 the effect of contraceptive use was the greatest.

Postpartum insusceptibility had more effect in 1988, 1992, and 1995 in rural Upper Egypt than the other indices. In general, the postpartum insusceptibility effect was the greatest in fertility reduction in rural upper Egypt compared with other regions. For all the other regions, contraceptive use has the greatest effect on fertility reduction in all the EDHS survey. The greatest effect of contraceptive use in fertility reduction in 2005 was observed in rural Lower Egypt.

The decomposition of change in the fertility rate between 1988 and 2005 is presented in Table 10 by place of residence. In the first column, fertility change is decomposed into the component due to each of the determinants. In the second column, standardization of the decomposition results to add 100 percent was calculated, then in the third column the absolute change in TFR (1.41 births between 1988 and 2005) is decomposed into the contribution made by the different proximate variables. The last column of Table 10 provides an estimate of the extent to which TFR would have changed between 1988 and 2005 if relevant proximate determinant had changed, and all other factors remained the same. Results indicate that the decline in the total fertility rate would have been greater by around two children in response to changes in contraceptive use and marriage, if all other determinants of fertility had remained constant.

The decomposition analysis presented in Table 10 suggests that changes in contraceptive use was generally the main factor in fertility decline during the period 1988 to 2005. Same result was also concluded in a previous study by Mansour, Enas et. el during the period between 1988 to 1992 with less effect of fertility decline.

Looking at the different regions, the results vary somewhat in the extent to which changes in contraceptive use inhibited fertility, with the largest effect observed for rural Lower Egypt and rural Upper Egypt. Changes toward late marriage contribute to fertility decline, although less significant than contraception, in all regions except Urban Governorates, where the age at marriage was high at the time of the 1988 Survey.

The duration of postpartum susceptibility has decreased over time in all regions, which due to the decline in the duration of breast feeding, had had no effect on fertility decline but had partially offset the effect of contraceptive use on fertility decline.

Looking at the decomposition of the change between every two consecutive surveys, one can notice the same effect of the proximate determinants, except for the change between 1992 - 1995 and 1995- 2000. The delay of marriage, in those periods, contribute more to fertility decline than the contraceptive use.

Table 10 Decomposition of the Change in Total Fertility from 1988 to 2005 by Place of Residence and Factors Responsible for Fertility Change.

Place of residence/factors responsible for fertility	Percentage change in TFR	Distribution of Percentage change	Absolute change in TFR
Egypt			
Proportion married	-7.31	-23.55	-0.33
Contraceptive use	-37.62	-121.14	-1.71
Postpartum insusceptibility	7.40	23.82	0.34
Other determinants	11.04	35.56	0.50
Interaction	-4.56	-14.68	-0.21
Total	-31.06	100.00	-1.41
Urban Governments			
Proportion married	2.10	10.55	0.07
Contraceptive use	-20.91	-105.24	-0.65
Postpartum insusceptibility	0.12	0.62	0.00
Other determinants	-1.04	-5.21	-0.03
Interaction	-0.14	-0.71	0.00
Total	-19.87	100.00	-0.62
Lower Egypt			
Urban			
Proportion married	-8.77	-27.14	-0.34
Contraceptive use	-24.77	-76.65	-0.97
Postpartum insusceptibility	3.09	9.55	0.12
Other determinants	-3.70	-11.46	-0.15
Interaction	1.84	5.69	0.07
Total	-32.32	100.00	-1.27
Rural			
Proportion married	-8.52	-17.21	-0.51
Contraceptive use	-52.39	-105.84	-3.12
Postpartum insusceptibility	14.47	29.23	0.86
Other determinants	21.47	43.38	1.28
Interaction	-24.53	-49.56	-1.46
Total	-49.50	100.00	-2.95
Upper Egypt			
Urban			
Proportion married	-10.20	-37.39	-0.44
Contraceptive use	-34.80	-127.59	-1.49
Postpartum insusceptibility	3.19	11.70	0.14
Other determinants	20.61	75.56	0.88
Interaction	-6.08	-22.28	-0.26
Total	-27.27	100.00	-1.17
Rural			
Proportion married	-13.37	-35.02	-0.85
Contraceptive use	-40.18	-105.27	-2.55
Postpartum insusceptibility	10.16	26.63	0.64
Other determinants	5.41	14.16	0.34
Interaction	-0.19	-0.50	-0.01
Total	-38.17	100.00	-2.42

Conclusions

Noticeable decline in fertility was observed in Egypt since 1988**.** The decline in fertility is evident in all regions as well as all wealth quintiles and among less educated women. The largest decline was observed in rural areas, while the lowest level in fertility was observed among women in Urban governorate.

The impact of the success of family planning program is reflected in the role of contraceptive use has played in fertility decline over the past Contraceptive use was the most important determinants of the fertility reduction that occurred between 1988 and 2005.

In order to achieve more reduction in fertility, a special program is needed to promote avoiding early marriage (under age 20 years), births to women under age twenty pose significant health risks for mother and children. Also, promoting late marriage will increase women opportunities for education.

Finally, the decline in the duration of postpartum insusceptibility over time is clear , with the least effect on fertility decline between 1988 and 2005. Accordingly, the results suggesting that greater effort is needed to encourage breastfeeding, specially in Urban governorates.

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Annex

Annex 1 Current Age - Respondent

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
15	12	.1	.1	.1
16	63	.3	.3	.4
17	151	.8	.8	1.2
18	265	1.4	1.4	2.5
19	367	1.9	1.9	4.4
20	482	2.5	2.5	6.9
21	483	2.5	2.5	9.4
22	660	3.4	3.4	12.8
23	695	3.6	3.6	16.3
24	688	3.5	3.5	19.9
25	984	5.1	5.1	24.9
26	747	3.8	3.8	28.7
27	680	3.5	3.5	32.2
28	715	3.7	3.7	35.9
29	654	3.4	3.4	39.3
30	785	4.0	4.0	43.3
31	615	3.2	3.2	46.5
32	638	3.3	3.3	49.7
33	599	3.1	3.1	52.8
34	552	2.8	2.8	55.6
35	851	4.4	4.4	60.0
36	565	2.9	2.9	62.9
37	599	3.1	3.1	66.0
38	614	3.2	3.2	69.1
39	557	2.9	2.9	72.0
40	773	4.0	4.0	76.0
41	498	2.6	2.6	78.5
42	589	3.0	3.0	81.5
43	514	2.6	2.6	84.2
44	453	2.3	2.3	86.5
45	759	3.9	3.9	90.4
46	415	2.1	2.1	92.5
47	449	2.3	2.3	94.8
48	521	2.7	2.7	97.5
49	482	2.5	2.5	100.0
Total	19474	100.0	100.0	

Annex 2 Percent Distribution of Ever-Married Women 15-49 by the Completeness of Reporting of Age Information - 2005

	Completeness of information						
	Month and year	Month and age -y imp	Year and age - m imp	Y & age - y ignored	Age - y, m imp	Total	Number
Type of place of residence							
Urban	89.2	0.1	0.3	3.2	7.2	100.0	8,033.3
Rural	69.5	0.1	0.8	9.6	20.0	100.0	11,440.7
Region							
Urban governorates	92.9	0.2	0.2	2.3	4.3	100.0	3,293.0
Lower Egypt	85.0	0.0	0.9	8.9	5.2	100.0	8,410.5
..Urban LE	92.5	0.0	0.6	4.4	2.4	100.0	2,199.1
..Rural LE	82.3	0.0	0.9	10.5	6.1	100.0	6,211.3
Upper Egypt	62.8	0.0	0.6	6.8	29.9	100.0	7,552.4
..Urban UE	81.2	0.0	0.3	3.2	15.3	100.0	2,411.1
..Rural UE	54.1	0.1	0.7	8.4	36.7	100.0	5,141.3
Frontier governorates	80.1	0.0	0.7	6.5	12.7	100.0	218.1
Educational level							
No education	53.3	0.1	1.0	13.2	32.4	100.0	6,739.6
Some primary	72.6	0.0	1.5	9.0	16.9	100.0	2,196.8
Primary through secondary	87.4	0.0	0.4	5.2	6.9	100.0	2,719.3
Completed secondary/Higher	96.7	0.1	0.2	1.6	1.5	100.0	7,818.3
Wealth index							
Poorest	52.5	0.1	1.1	12.8	33.5	100.0	3,565.0
Poorer	65.5	0.1	1.1	10.6	22.7	100.0	3,777.9
Middle	78.4	0.1	0.7	7.7	13.1	100.0	3,931.2
Richer	90.9	0.1	0.4	3.4	5.3	100.0	4,137.2
Richest	96.8	0.0	0.0	1.2	1.9	100.0	4,062.7
Total	77.7	0.1	0.6	6.9	14.7	100.0	19,474.0

Annex 3 Percent Distribution of Ever-Married Women 15-49 by Terminal Digit of Age - 2005

	Terminal digit												
	0	1	2	3	4	5	6	7	8	9	Total	Number	Myers index
Type of place of residence													
Urban	9.7	8.1	9.4	9.4	9.4	12.4	9.7	10.1	11.0	10.7	100.0	8,033.3	8.5
Rural	11.6	8.2	9.7	9.2	7.9	14.3	8.4	9.6	10.7	10.4	100.0	11,440.7	13.8
Region													
Urban governorates	8.8	8.5	9.3	9.5	10.2	12.7	9.5	10.5	10.1	11.0	100.0	3,293.0	8.8
..Urban LE	10.3	7.4	9.5	9.2	9.8	12.2	8.9	9.6	12.2	10.9	100.0	2,199.1	11.2
..Rural LE	11.1	8.4	10.4	9.6	8.1	13.4	8.4	9.0	10.9	10.7	100.0	6,211.3	12.8
..Urban UE	10.3	8.0	9.5	9.6	8.1	12.3	10.7	10.0	11.3	10.1	100.0	2,411.1	9.7
..Rural UE	12.1	8.0	8.9	8.8	7.7	15.3	8.3	10.3	10.5	10.1	100.0	5,141.3	16.6
Frontier governorates	11.1	8.3	10.0	7.7	9.4	13.0	11.1	9.2	10.8	9.3	100.0	218.1	12.1
Educational level													
No education	12.7	7.4	9.3	8.4	6.8	16.1	7.8	10.2	10.8	10.7	100.0	6,739.6	20.7
Some primary	9.7	7.3	8.9	9.4	9.1	14.5	8.8	11.2	10.2	10.8	100.0	2,196.8	13.3
Primary through secondary	10.1	8.2	9.5	9.9	9.5	11.0	8.7	10.0	11.9	11.3	100.0	2,719.3	8.6
Completed secondary/ Higher	9.8	9.0	10.0	9.8	9.6	11.9	10.1	9.0	10.7	10.0	100.0	7,818.3	5.4
Wealth index													
Poorest	13.0	8.7	9.2	8.5	6.8	16.5	7.5	9.8	10.2	9.9	100.0	3,565.0	19.3
Poorer	11.7	8.2	9.6	8.9	7.5	14.1	8.5	10.0	10.9	10.5	100.0	3,777.9	14.5
Middle	11.0	7.7	10.6	9.7	8.9	12.7	8.6	8.9	11.1	10.9	100.0	3,931.2	12.5
Richer	9.3	7.9	9.5	9.6	9.5	12.7	10.0	10.1	10.9	10.5	100.0	4,137.2	8.4
Richest	9.5	8.3	9.0	9.8	9.7	11.9	10.0	10.2	11.0	10.7	100.0	4,062.7	7.5
Total	10.8	8.2	9.6	9.3	8.6	13.5	9.0	9.8	10.8	10.5	100.0	19,474.0	11.3

Annex 4 Percent Distribution of all Live Births and all Births during the Period 1986-2005 by Completeness of Reporting of Birth Date Information - 2005

	All births			All births 1996 - 2005		
	Alive	Dead	Total	Alive	Dead	Total
Completeness of information						
Month and year	93.0	57.5	90.0	97.5	81.3	96.8
Month and age -y imp	0.0	0.0	0.0	0.0	0.0	0.0
Year and age - m imp	0.6	0.0	0.6	0.2	0.0	0.2
Y & age - y ignored	6.3	0.0	5.8	2.2	0.0	2.1
Year - a, m imp	0.0	42.1	3.6	0.0	18.6	0.9
Age - y, m imp	0.0	0.0	0.0	0.0	0.0	0.0
Month - a, y imp	0.0	0.0	0.0	0.0	0.0	0.0
None - all imp	0.0	0.3	0.0	0.0	0.1	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	54,802.1	5,081.4	59,883.5	24,042.7	1,152.3	25,195.1

Annex 5 Percent of all Live Births in the 2005 EDHS for which Information on the Birth was Complete - 2005

	All births - Alive	All births - Dead	All births - Total
Type of place of residence			
Urban	96.9	65.0	94.8
Rural	90.7	54.7	87.2
Region			
Urban governorates	97.9	67.8	96.3
Lower Egypt	95.8	65.0	93.7
..Urban LE	98.2	72.9	96.9
..Rural LE	95.0	63.1	92.7
Upper Egypt	88.5	51.5	84.4
..Urban UE	94.4	58.7	91.4
..Rural UE	86.2	49.6	81.8
Frontier governorates	97.4	68.1	95.9
Educational level			
No education	87.8	51.6	83.7
Some primary	91.2	53.2	87.0
Primary through secondary	97.7	70.7	95.9
Completed secondary/Higher	99.4	84.2	98.9
Wealth index			
Poorest	84.0	47.9	79.6
Poorer	91.3	55.4	87.6
Middle	94.9	60.7	92.0
Richer	97.6	69.5	96.0
Richest	99.2	77.9	98.3
Total	93.0	57.5	90.0