The relationship between poverty and fertility: the case of Egypt

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Introduction

The importance of the economic factor in the fertility transition has been reminded by several researchers and contested by others. The economic development was a central point of the demographic transition theory of Notenstein; however its main hypothesis has not been corroborate by the studies carried out later on fertility decline in Europe and in the developing countries[1].

If the economic development is not the factor that leads to the onset of fertility decline, there is anyway a link between the economic situation of the country and the decision-making of households as far as fertility choices are concerned.

In our research we will analyse the relationship between households standard of living and fertility in Egypt: it will be a study at micro level.

1) *Theoretical approach*

As Schoumaker and Tabutin stated[2] in their in deep study about relationship between poverty and fertility, is not easy to define a causal link between these two variables. In the literature, comparing 32 studies conducted about this topic they found five different categories or way to describe such relationship:

1- *no relationship* between those two variables, such situation is not a very frequent one.

2- *rather positive relationship:* fertility increases slightly together with the increase of standard of life: there could be biological and behavioural reasons to prevent poor population to have children.

3- *Slightly negative relationship:* fertility increases slightly together with the decrease of standard of life.

4- *U or inversed J relationship:* fertility increases in poor social classes and after in the richer one; this process is followed by a decrease in the latter one.

5- *Strongly negative relationship:* fertility increases noticeably and quite regularly together with decrease in standard of life.

Such different relationships could be linked to the methods chosen to measure poverty phenomenon and fertility level. In fact, in the poverty measurement, a relative or an absolute approach can be used. In general, the most common way to measure poverty is the relative approach: a poverty line is defined as a percentage cut-off point of household per capita annual income or of household annual expenditures below which, say, 30 per cent of the population is located. As well as poverty level, fertility has a various range of measurement, such as total fertility rate (TFR), parity distribution, global fertility rate and so on.

For sure, the various relationships between fertility and poverty that Schoumaker and Tabutin found in their analysis can be imputed to the approaches that were followed in the study of such variables.

However another problem arises because there could be various paths that link living standards to fertility (see figure 1). There could be a direct or an indirect impact of poverty on

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[1] Coale et Watkins, 1986.
[2] Schoumaker B., Tabutin D., *Relations entre pauvreté et fécondité dans les pays du Sud. Etat de connaissances, méthodologie et illustrations*, SPED Document de Travail, No. 2, Feb 1999, Université Catholique de Louvain, Département des Sciences de la Population et du Développement: Louvain-la-Neuve, Belgium.

fertility levels. Other variables can affect poverty and fertility at the same time. Control variables such as education level, region, and residence zone could strongly put into perspective results previously obtained.

It also is important to take in to consideration the different approaches to explain poor people fertility behaviour: in the culturalist approach the high fertility level among poor is considered as a consequence of their ignorance, that behaviour is consequently seen as non rational in the economic meaning of the term. According to the economic approach, fertility behaviour is considered as "generically rational" i.e. governed by calculated and conscious interest of actors. The main idea is that children can generate for parents benefits more consistent that their costs.

Another approach considers demand for children as similar for both poor and non-poor people; the problem would be a miss of access to contraceptive methods: this is the well-known problem of unmet needs.

Figure 1. Different paths linking poverty and fertility
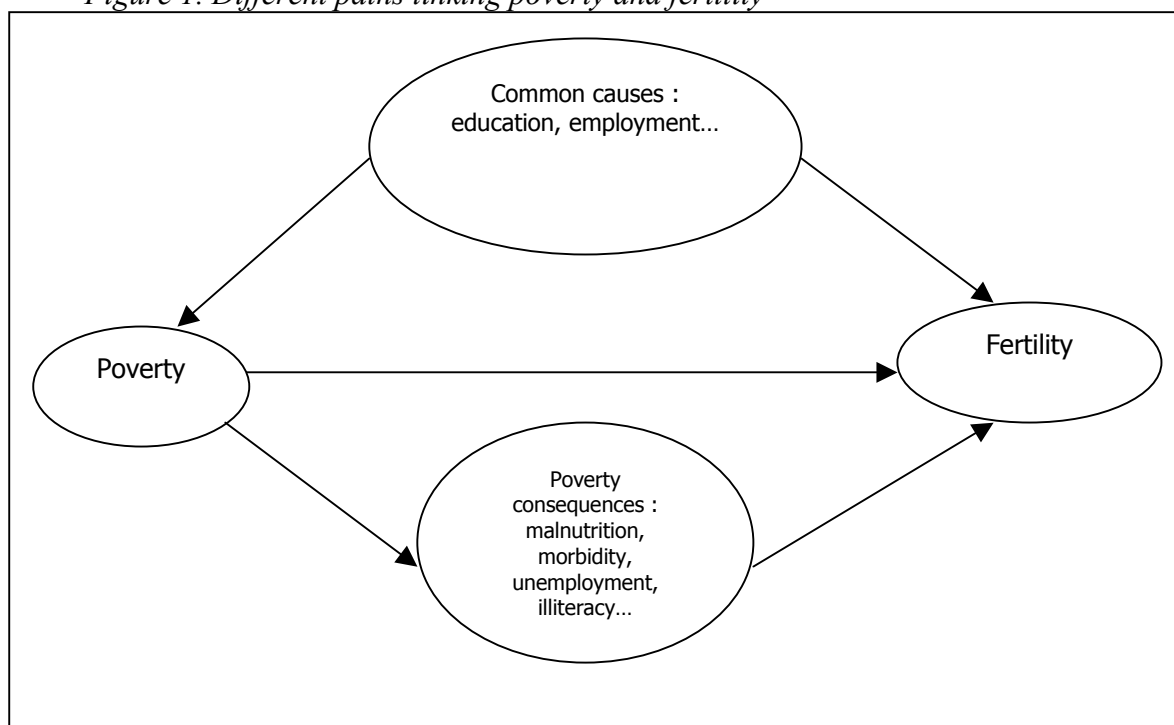
Source: Ajbilou A., Femme, pauvreté et comportements démographiques au Maroc, in *Femme, pauvreté et comportement démographique et sanitaire cas du Royaume du Maroc*, Ligue des Etats arabes, Le Caire, 2001.pp. 123-147.

2) Poverty evolution in Egypt

Poverty evolution has followed the changes occurred in the Egyptian economy during the second half of the 20th century. Nasser political economy engaged the redistribution of lands for agriculture, the implementation of public assistance programs and the institution of food subsides. Actually, his objective was to reduce income inequalities. His program was partially realised because of the economic situation unfavourable that followed the 1967 war with Israel.

During the seventies Sadat, the new president, implemented a political economy of opening to foreign investments and markets: this new policy caused enormous changes in the local economy and the poverty augmented suddenly. During Mubarak presidency, in the eighties and nineties, the open door policy, together with privatisations and structural reforms programs were carried on.

However, the poverty increased and between 1981 and 1996, the number of people living under the poverty line raised in the urban and rural zones (table 1).

According to a study of the World Bank, poverty has decreased in Egypt between 1995 and 2000, causing a reversal compared to previous decades.

Nevertheless, occurred changes do not apply to all regions ; poverty is still considerable in Upper Egypt, in urban and rural settings; in addition inequalities increased in the period studied by the World Bank. On the other hand, in Lower Egypt and in the urban governorates the situation improved.

Table 1. Egypt, Percent of population living under the poverty line, urban and rural zones, , according to various estimations, 1958/59-1995/96.

Source/ Year	1958/59	1964/65	1974/75	1981/82	1990/91	1995/96
			Urban			
World Bank (1991)					21	
Korayem (1994				30,4	35,9	
El-Laithy and Osman (1997)				18,2	20,3	22,5
Cardiff (1997)					12,6	30,8
El Laithy et al. (1999)				16,8	26,1	29
			Rural			
World Bank (1991)					25	
Korayem (1994				29,7	56,4	
El-Laithy and Osman (1997)				16,1	28,6	23,3
Cardiff (1997)					32,2	55,2
El Laithy et al. (1999)				16,6	34,1	29
Adams (1985)	27	24	65			

Source: World Bank (2002), Hansen (1991).

3) *Fertility and Poverty in Egypt*

The first part of our study of relationship between poverty and fertility in Egypt is based on data from the survey "Stratification, Social Mobility and Fertility"[3] that has been conducted on 1995-96 by the Social Research Center of the American University in Cairo, using the same sample of the EDHS 1992 survey. This survey contents households and individual monthly income and expenditures data, that allowed us to implement poverty line based on the median of the monthly expenditures per capita. We took also into account of the number of households' members using an equivalence scale. Thus, we used total fertility rate to measure fertility. Analysis was conducted also at regional level and control variables such as education and contraceptive methods use were used.

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[3] A special thanks to Professor Hoda Rashad of AUC and her staff for the authorisation to use those data.

Our analysis was descriptive: results obtained (tables 2-7) show a negative relationship between poverty and fertility, also the control variables analysis (education and contraceptive use, zone and region of residence) confirms this first view.

Fertility rate is higher in the rural zones then in the urban one; literacy is also a determinant factor in the shift from a high level of fertility to a medium one regardless of the standard of living.

Table 2. Egypt, Total fertility rate of poor and non poor women according to zone of residence and education level.

	TFR by residence		TFR by education level			
	Rural	Urban	Primary	Secondary	University	Total
Poor Women	4.4	3.6	4.4	3.8	2.8	4.2
Non poor women	3.7	3	3.7	3.2	2.6	3.4

Source: Author's calculation from Stratification, Social Mobility and Fertility Survey, AUC 1995-96.

Table 3. Egypt, Proportion of married women using modern contraceptive methods, of poor and non poor women according zone of residence

	Rural	Urban	Total
Poor Women	69.28	51.43	56.06
Non poor women	69.05	56.11	64.28

Source: Author's calculation from Stratification, Social Mobility and Fertility Survey, AUC 1995-96.

Table 4. Egypt, Average age at first marriage: poor and non poor women according to zone of residence

	Rural	Urban	Total
Poor Women	17.76	19.27	18.16
Non poor women	18.77	21.11	20.27

Source: Author's calculation from Stratification, Social Mobility and Fertility Survey.

Table 5. Egypt, Total fertility rate of poor and non poor women according to region of residence

	TFR by region of residence					
	Urban Governorates	Lower Egypt Urban	Lower Egypt Rural	Upper Egypt Urban	Upper Egypt Rural	Total
Poor Women	3.6	2.4	3.8	4.1	4.9	4.2
Non poor women	2.7	2.7	3.7	4.2	3.9	3.4

Source: Author's calculation from Stratification, Social Mobility and Fertility Survey, AUC 1995-96.

As far as contraception is concerned, we notice that rural women are less inclined to use modern methods than urban one; mean age at first marriage is higher in urban settings than in rural. In urban and rural zones richer women get married later than poor one.

Upper Egypt is the poorest among the Egyptian regions, here fertility rate is still quite high, regardless of women standard of living.

Table 6. Egypt, Proportion of married women using modern contraceptive methods, of poor and non poor women according to region of residence

	Urban Governorates	Lower Egypt Urban	Lower Egypt Rural	Upper Egypt Urban	Upper Egypt Rural	Total
Poor Women	71.2	74.0	65.3	59.7	38.8	56.06
Non poor women	66.1	73.6	69.2	70.9	39.8	64.28

Source: Author's calculation from Stratification, Social Mobility and Fertility Survey, AUC 1995-96.

Table 7. Egypt, Average age at first marriage: poor and non poor women according to region of residence

	Urban Governorates	Lower Egypt Urban	Lower Egypt Rural	Upper Egypt Urban	Upper Egypt Rural	Total
Poor Women	20.0	19.3	18.3	17.5	17.3	18.16
Non poor women	21.1	20.9	19.3	21.3	18.1	20.27

Source: Author's calculation from Stratification, Social Mobility and Fertility Survey, AUC 1995-96.

Unfortunately, data from the Poverty Study has a big inconvenient: the survey was conducted only once so it is not possible to make comparisons with the past.

Thus, to study the evolution of relationship between fertility and poverty over the time we used Egyptian Demographic and Health Survey (EDHS) as well.

This kind of surveys does not contain data on income or households consumption expenditures. To measure household wealth we constructed an asset index composed by data on asset ownership and housing characteristics, following the approach of Filmer and Pritchett[4]. We overcome the absence of expenditure data by using the information collected on assets owned by households' member and housing characteristics. This data are used to generate an asset index that proxies for wealth. In the EDHS surveys we found 21 asset indicators expressing asset ownership and housing characteristics. To aggregate the assets index into one variable to proxy for households' wealth (socio economic indicator SEI): we chosen to use the statistical procedure of principal components analysis to determine the weights for the index.

According to economic situation -socio-economic index SEI-we compared EDHS 2003, 2000, 1995, 1992 and 1988 data, constructing an indicator of household well-being. We sorted individuals by the asset index and established cut off values for percentiles of the population. Then we assigned households to a group on the basis of their value on the index: 3 levels of the index are created, the bottom 25% (poor SEI_1), the middle 50% (middle SEI_2) and the top 25 %(rich SEI_3).

Total fertility rate has been calculated according to the three standard of living levels and the results obtained are showed on table 8. Results are quite interesting: fertility is decreasing but not at the same pace for the different level of standard of living. The fertility of poor people is higher than

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[4] Filmer D., Pritchett L. H., 2001, *Estimating wealth effects without expenditure data or tears : an application to educational enrolments in states of India*, in Demography, vol. 38, n. 1, February, pp. 115-132

medium and high level classes; this confirms previous analysis and the persistence of a negative relationship between poverty and fertility.

Total fertility rate evolution over the time is quite surprising: we can see that the pace of decrease is much more important for poor women and quite insignificant for medium and high standard of living: the latter has even increased, anyway it does not show a clear drop but it is quite uncertain. This seems to be a very important point in the evolution of the fertility in Egypt nowadays: a quite positive relationship between poverty and fertility should be imagined for the next years? What could be the reason of such change of direction on the evolution of these variables?

Table 8-Egypt, Total Fertility Rate by SEI, 1998-2003.

Year	1988			1992			1995			2000			2003		
Age group	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3
15-19	86	91	94	61	64	68	63	62	58	52	53	47	56	43	59
20-24	149	146	169	222	217	173	228	201	167	215	200	185	215	183	164
25-29	170	169	182	260	219	204	233	210	194	225	200	202	206	192	175
30-34	173	177	178	211	149	130	170	133	131	157	130	161	129	128	125
25-39	208	173	175	138	96	57	119	79	60	105	68	59	92	54	55
40-44	145	164	142	74	45	24	39	28	17	38	22	19	33	18	10
45-49	156	74		12	8		13	6	4	9	4	2	22	4	
ISF	**5.43**	**4.97**	**4.7**	**4.89**	**4**	**3.29**	**4.33**	**3.60**	**3.16**	**4.01**	**3.39**	**3.37**	**3.77**	**3.11**	**2.94**

Source: Author's calculation from EDHS 1988 - 2003.

We checked our results using control variables: we analysed women standard of living controlling with the education level during the period 1988-2003 (table 9). Poor women progressed especially regarding the level reached: in 2003 the percentage of women having an high school diploma is higher than in 1988. On the other hand, the proportion of illiterate women almost did not change. Women with a medium or higher standard of living made the greatest progress and nowadays a lot of them have secondary and university education level.

Table 9. Egypt, Proportion of women by education level and household standard of living 1988-2003.

Year	1988			1992			1995			2000			2003		
Education	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3
Illiterate	75.6	67.4	35.1	79.1	61.03	26.6	75.5	55.2	22.3	73.2	55.9	22.9	74.5	53.8	21.7
Primary	19.8	29.1	37.8	17.4	25.7	30	19.7	27.4	26.2	16.6	20.1	18.4	15.2	19.9	16.7
Secondary	3.1	3.2	20.1	3.4	12.7	34.1	4.8	16.8	39.2	9.8	23	43.3	10.2	25.6	46.7
University	1.5	0.3	6.9	0.04	0.5	9.3	0.01	0.7	12.3	0.3	1.1	15.3	0.1	0.7	14.9

Source: EDHS 1988 - 2003.

At regional level, the standard of living is decidedly better in big cities and in urban zones both in Lower and Upper Egypt. In the countryside, there is the biggest concentration of poor households.

Those kind of consideration does not allow us to explain fertility evolution in the period observed trough changes in the education level, however, we must remind that the education level fluctuates very slowly in the short period, as in our case. According to Fargues analysis of Egyptian economy and birth rate evolution at macro level, birth rate modifications have followed the swings of economy (Fargues, 1997).

Table 10. Egypt, proportion of women by region of residence and household standard of living 1988-2003.

Year	1988			1992			1995			2000			2003		
Region	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3	SEI_1	SEI_2	SEI_3
Urban Governorates	5.7	1.9	32.5	1.9	9.4	42.2	2.4	12.4	37.3	2.9	6.7	33.1	2.2	3.7	27.4
Lower Egypt urban	1.0	2.8	17.7	2.0	9.7	18.7	2.5	9.6	18.7	4.0	8.3	18.9	2.4	5.1	18.4
Lower Egypt rural	34.6	51.7	20.1	38.5	45.8	15.8	37.6	43.3	18.9	40.6	48.5	19.0	35.9	51.8	24.6
Upper Egypt urban	3.6	8.9	16.9	4.4	7.7	14.8	4.3	8.3	15.1	4.5	7.0	17.1	4.5	6.3	15.4
Upper Egypt rural	55.1	34.6	12.9	53.3	27.4	8.5	52.4	25.8	9.0	46.8	28.7	10.3	55.0	33.2	14.2
Frontier Governorates							0.9	0.6	1.1	1.4	0.7	1.6			

Source: EDHS 1988 - 2003.

As far as contraception is concerned, the proportion of poor and middle class women using contraception has increased steadily during the period 1988-2003; between richer women indeed, the proportion raised slowly.

On the other hand, ideal number of children on average, remained stable during all the period observed, it shows that there has not been important changes in the consideration of children in the Egyptian households.

Figure 2.-Egypt, Proportion of women using contraception by households standard of living, 1988-2003
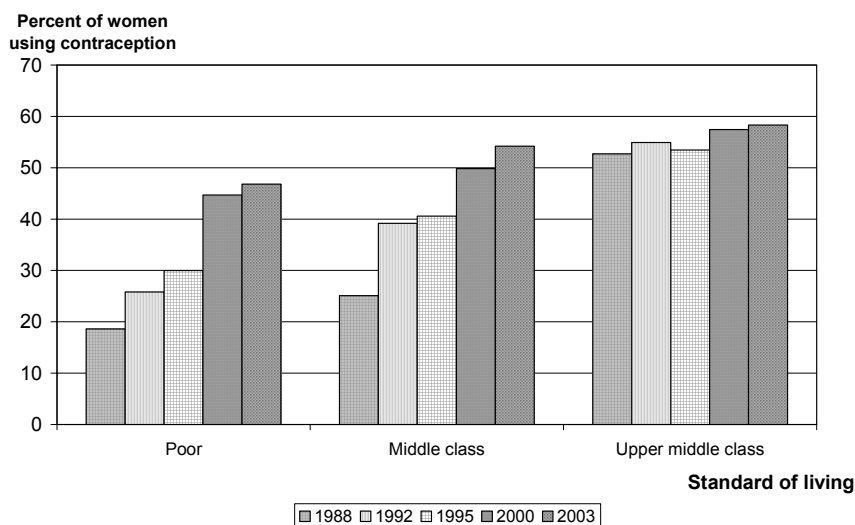
Source: EDHS 1988 - 2003.

Figure 3.-Egypt, Ideal number of children (average) by households standard of living, 1988-2003.
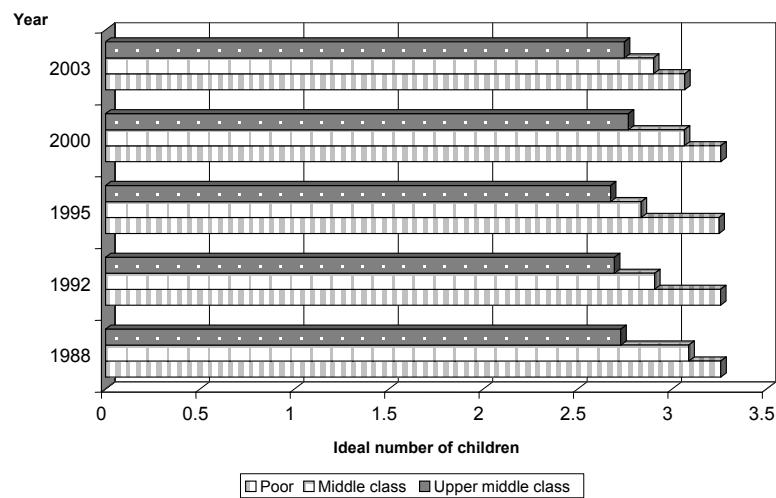
Source: EDHS 1988 - 2003.

Conclusion

The effect of the crisis of the Egyptian economy that since the Eighties affected the country, influenced the decision to have children. Poor households suffered more from the crisis and their fertility decreased more. In fact, they increased the use of contraceptive methods compared with the past: in the Egyptian households the desire for children did not change. This statement could explain on the other hand, the stability of fertility rate in the middle and upper middle class during the period 1988-2003.

In literature, we can find studies on fertility transition lead by conflicts and economic crisis[5]; in those cases the population will loose the motivation of childbearing because of poverty. This hypothesis seems to correspond with fertility evolution in Egypt during the last thirty years.

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[5] voir par exemple Hill K., Palloni, A. (1994) et Lesthaeghe R. (1993).

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