The Fertility and its Relation with Some Demographic, Economic and Social Variables in Jordan

Noha M. Rasheed[1], Mohammad A. Tashtoush[2]

[1&2] AL-Balqa Applied University, AL-Huson University College,
Address: AL-Huson P.O. Box 50, AL-Huson, 21510
AL-Huson University College
E-mails: nohamr@bau.edu.jo, tashtoush80@bau.edu.jo

Abstract

Migration, mortality and fertility are the main three factors that affect growth of population, and fertility is considered as the head of the list. In Jordan and according to the 2007 population census, the total fertility rate was 3.6 births per woman on average, this rate took a very closed value in 2012 were it was 3.5 on average. This relatively low and simple improvement of fertility rates helped the population growth rates to be stable as 2.2% in both years. This study was based primarily on the census data for the years 2007 and 2012, where the main objective of it is to analyze the demographic and socio-economic factors, associated with fertility in Jordan.

Introduction

Demographic, economic and social characteristics of any society affect fertility in it. A large number of researchers attempted to identify the shape of the relationship between fertility and these characteristics and the strength of the effect of each of them. It's known that the effect of focusing on those characteristics related to women first and foremost and then the husband, family and the family surroundings. Characters of women from demographic side are age, age at first marriage, and use of contraception. The social factors include marital status, educational level of both husband and wife, health situation; economic factors are women's work outside home and the level of family income.

(Bongaarts, 1978) has pointed out that the moderation variables that have a direct effect on fertility are marriage, breastfeeding, use of family planning methods and abortion. But (Khan, 1997) showed in his study "Multi-Modeling of the Determinants of Fertility in Bangladesh" as among the social factors, age of marriage for women is one of the most important variables, since it has a direct correlation with fertility. While (Neupert, 1992) found in his study of demographic trends in Mongolia, the factors affecting the fertility decline in Mongolia is the high literacy rate, low infant mortality rate, urbanization, industrialization and women's participation in economic activity.

In a study of the determinants of fertility in Abu Dhabi (United Arab Emirates) (Muhammad Aljabry, 2002) found that demographic, economic and social variables explain 61% of the changes in fertility in Abu Dhabi. Among these variables, only three variables have a significant correlation with fertility relationship. These variables are: women age, age of first marriage for women and the educational level of women. The variables age of first marriage and the educational level of women have shown an inverse correlation with fertility relationship, while women age showed a positive correlation.

(Mohammed Miqdad, 2007) in his study "Demographic Growth and its Impact on the Population in the Sultanate of Oman" pointed out that the high birth rate in the Sultanate due to demographic factors are higher proportion of young people and then the high fertility rate, in addition to the low participation of women outside the home and the high illiteracy rate. There are also social factors because the rural and tribal society encourages increase the proportion of reproduction.

(Suleiman Bin Azzun and Ali al-Saqqaf, 2006) in their study of "Cultural and Social Determinants of Early Marriage in Yemen", using the method of logistic regression analysis indicated that, women's education variable has importance to delay the occurrence of early childbearing, that educated women do not think much of early marriage and thus delay their marriage, and then have fewer children compared with illiterate women, or women won a share of the education.

(Nawal Shtiwi 0.2006) pointed in her study of the determinants of fertility in Tunisia, to the illiterate women and women with primary education have to be, on average, respectively 1.22 and 1.14 additional children compared with women with secondary education or higher. The more educated women were, the less fertility they had.

A study of (Schoemaker, 2005) showed that there are substantial differences in the use of modern family planning among poor and better-off women in Indonesia. Poor women have tendency for large families and less commonly used means of family planning compared to women better-off women with highest economic and social situation.

(Hisham Makhlouf, 2006) showed, in his study on the demographic situation in Egypt, that the decline in the total fertility rate in Egypt from 5.3 children in 1980 to 3.5 children in 2000 and then to 3.1 in 2005, largely due to intensive efforts have been made to the areas of education, in addition to the efforts in the field of family planning and where the proportion of married women of childbearing age who use family planning methods increased from 24.2% in 1980 to 56.1% in 2000 and then to 59.2% in 2005.

In addition to the importance of education, some studies indicate the importance of the standard of living, urbanization and cultural background of the family and their impact on the fertility rate. A study of (Munir Karadsheh, 2001) for estimating the variations of spacing between births in Jordan, using analysis of model life tables, showed that fertility in Jordan have not changed in general, and there are only some change may hit some segments of society and groups after the birth of a second child as women more educated workers, as well as the change that has hit women who grew up in the major cities in Jordan after they are born the third child category. The study also indicated that the total fertility has declined after the birth of the fifth child.

But some studies have shown that income factor does not directly affect fertility, but by other factors. For example, the study showed (Shafiq Hassan, 2006) for fertility differences between Arab countries factors, using multiple regression method, the income variable that does not directly affect the reduction in fertility, but through a strong positive relationship with education, health and urbanization.

In a similar study (D. Ali Ahmad Al-Saqqaf, 2009) in his study, "Fertility and its Relation with some Demographic, Economic and Social Variables in Yemen" showed that the rise in population growth in Yemen is attributed to the lack of noticeable change in fertility rates and survival at high levels during one decade, while the mortality rate has fallen at a faster pace, where the crude birth rate dropped from 52 per thousand in 1994 to 39.7 in 2005 and during the same period, crude mortality rate dropped from 21 per thousand to 9 per thousand.

Main Problem

The population growth rate in Jordan did not have any change in Jordan, according to the results of the census of 2007 and 2012 where it maintained a value of 2.21 for these two years. While the crude birth rate has declined from 29.1 in 2007 to 28.1 in 2012, and the crude mortality rate had a value of 7.0 per thousand both years. No doubt that fertility rates are related to a number of factors: demographic, social or economic ones. The aim of this study is to investigate the relationship between these variables, which certainly have an impact on fertility behavior in Jordan

Study Questions

There are two questions we try to answer, that are essential in this study:
1. What are the most important demographic, social and economic variables that have a statistically significant correlation function with fertility in Jordan?
2. What explanatory variables to changes in fertility methodology by analyzing the relationship between them and the total fertility rate.

Objectives of the Study

This study aims to achieve the following:
1. Analysis of fertility levels and trends in Jordan.
2. Identify the variations of fertility by selected characteristics.
3. Analysis of the correlation between fertility and demographic, and socio-economic characteristics represented by urbanization, age groups, education, age at first marriage, percentage of females in labor force, rates of housing-related public network of water, electricity and sewage, number of: hospitals, doctors, nurses, pharmacist and midwives average.
4. Propose some recommendations that may have an impact in influencing the fertility rate decline.

Sources of the Study

This study was based on a number of sources that are concentrated in surveys of population and family health, particularly for the years 2007 and 2012 where copies of them were obtained from the Department of Statistics, which provided these surveys, detailed data on fertility variations, also

used the data contained in the books and reports on the census for these years. Statistical software packages (SPSS) for data processing was applied to the data available in our hands in this study.

Fertility Levels and Trends

Depending on the demographic surveys during the period 1990-2012, as shown in Table (1), a significant decline in the total fertility rate was noticed, which fell from 5.6 births on average per woman in 1990 to 3.5 births in 2012 to be close with total fertility rates in some Arab countries, where the total fertility rate for each of the Sultanate of Oman, Egypt and Mauritania were: 3.2, 3.2, 3.3 births per woman on average, respectively (United Arab Economic Report 2006).

According to the data in the table (1), the pace of reproduction was reducing faster until 2002, where it slowed down after that, where the decline was 21% between 1990 and 1997, and 16% in between 1997 and 2002, while fertility levels almost unchanged thereafter.

The results indicate that the fundamental relative decline was observed among women in the age 40-49 years, where the rate declined about 57% between 1990 and 2012 at the age 40-44 and 84% for women in age 45-49 years during the same period. Results indicated that the decline in the total fertility rate may temporarily stopped in Jordan. This phenomenon (stability in the total fertility rate long-standing time) was noticed in neighboring countries such as Egypt and Syria (Zinati Dre 2009).

Table (1) : Detailed fertility rates and fertility rates by age group from different surveys in Jordan 1990-2012

Years / Age Category	1990	1997	2002	2007	2012
15-19	49	43	28	28	26
20-24	219	172	150	148	139
25-29	296	246	202	212	209
30-34	264	206	184	162	180
35-39	188	144	122	121	111
40-44	79	48	43	41	34
45-49	19	11	5	6	3
Total Fertility Rate	5.6	4.4	3.7	3.6	3.5

Source: Population and Family Health Survey for 2007 and 2012.

Detailed fertility rates for each 1000.000 women.

Total fertility rate, expressed per woman.

Table (2) shows that women give birth to an average of 3.5 children during her reproductive years in 2012 and this is less about 3% on average in 2007 (3.6 children per woman), and the childbearing levels is rise in rural from urban areas (3.9 children compared to 3.4 children per woman).

It is noted that the most important fundamental differences in reproduction between urban and rural areas in 2012 are in the age group 25-29, where women give birth in the countryside, on average, more than 35 children in urban areas while these fundamental differences are in the age group 30-34 in 2007 where women give birth in the countryside, on average, 43 children more than women in urban areas. According to the detailed rates of reproduction in the table, the women give birth to an average of less than one child 0.8 a child in 2012 and 0.9 children in 2007 before the arrival of 25 years old, but they give birth to about 2.8 children in both years before they reach age 35.

The table also indicates that the crude birth rate stood at 272 per thousand in 2012, while 28.1 per thousand in 2007 amounted to note that in both years .The crude birth rate in rural areas is higher than in urban areas with more convergence in rates in 2007 than in 2012.

For the total fertility rate convergence in both years, it was also higher in rural areas than in urban ones with more convergence in rates in 2007 than in 2012.

These notes are illustrated in figure (1) for the year 2007, and in figure (2) for the year 2012 separately.

Table (2): Detailed fertility rates by age group and place of residence, total fertility rates and crude birth rates for the previous three years of 2007 and 2012 in Jordan.

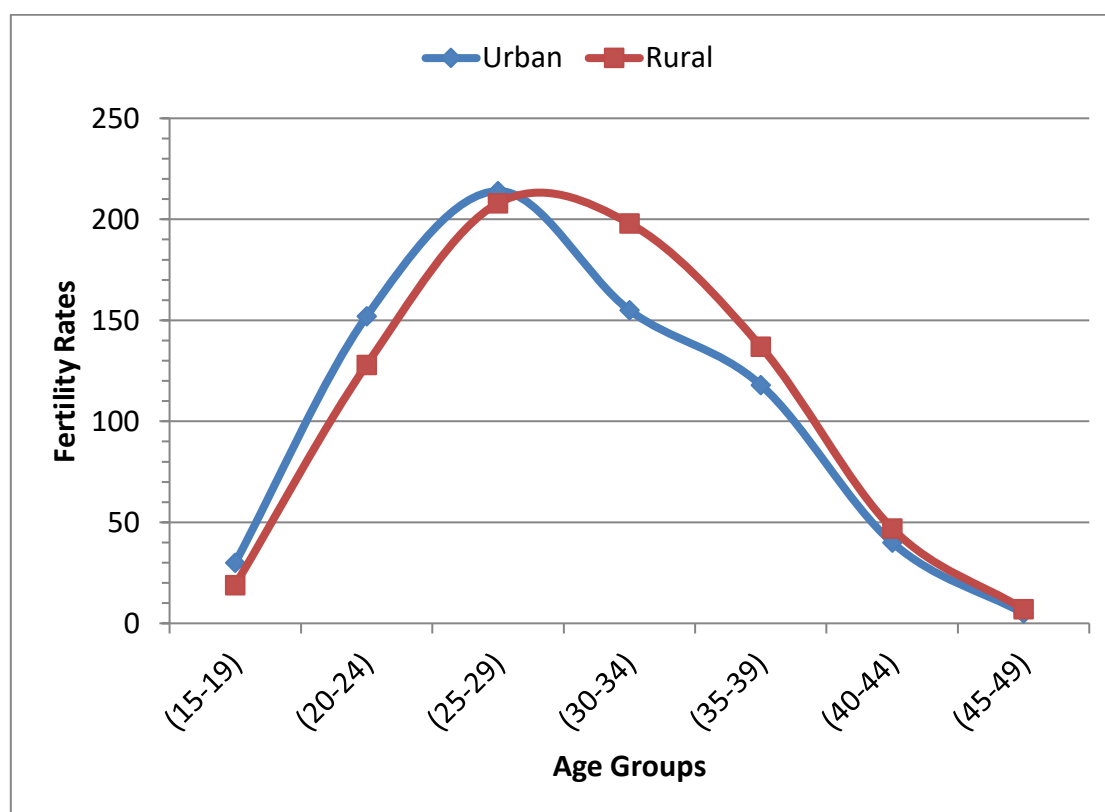| Year / Age group	2007			2012		
	Urban	Rural	Total	Urban	Rural	Total
15-19	30	19	28	27	18	26
20-24	152	128	148	138	142	139
25-29	214	208	212	202	237	209
30-34	155	198	162	176	200	180
35-39	118	137	121	108	125	111
40-44	40	47	41	31	49	34
45-49	5	7	6	3	5	3
Total fertility rate (TFR)	3.6	3.7	3.6	3.4	3.9	3.5
Crude birth rate (CBR)	28.1	28.2	28.1	26.7	29.8	27.2

Figure (1): Detailed fertility rates by age group and place of residence for the previous three years of 2007 in Jordan.
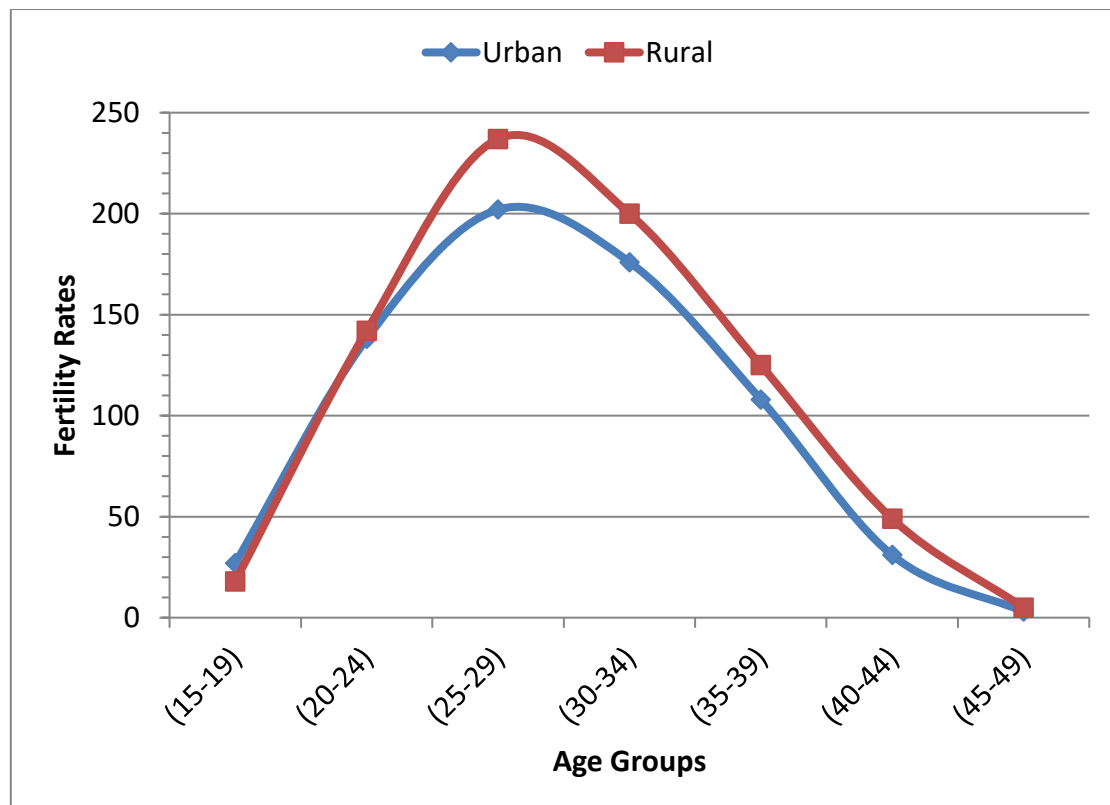
Figure (2): Detailed fertility rates by age group and place of residence for the previous three years of 2012 in Jordan.

Fertility Variations

There are variations in fertility levels in Jordan between urban and rural areas, on one side, and between the regional zones (center, north, south), on the other side. Table (3) indicates variations of fertility (soundings total fertility rate), according to some characteristics. We note from this table that the fertility rate of women living in the north high compared with women living in the center and south in both surveys. It is observed that total fertility rate for women with a preparatory education (an average of 4.5 births per woman), in the survey of 2007, while it is available for women with secondary education in the 2012 survey.

There is no doubt that the social and cultural conditions in Jordanian society have an important role in the variations of fertility in the geographical areas, and that the achievement of relatively low levels in fertility rate in urban areas compared with rural ones is an indicator of the possibility of achieving low levels in various areas by adopting developmental socio-economic programs inclusive of the different areas.

Table (3): Total fertility rate, according to some characteristics (Region, Badia Region, Educational Level) for the previous three years of 2007 survey and the three years prior to the survey in 2012.

Characteristics		Total fertility rate for the year 2007	Total fertility rate for the year 2012
Region	Middle	3.5	3.4
	North	3.8	3.8
	South	3.6	3.7
Badia region	Badia	4.2	4.4
	Non-Badia	3.5	3.4
Educational level	Uneducated	2.6	3.0
	Primary	3.9	3.9
	Preparatory	4.5	3.8
	Secondary	3.9	4.2

	Higher than secondary	3.2	3.0

The Relationship between Fertility and Demographic, Economic and Social Variables Analysis.

Multiple regression analysis was used to analyze the way the relationship between fertility and demographic, economic and social variables. Where the dependent variable is the total fertility rate and independent variables are the demographic, economic or social characteristics and given the general formula of the model as follows:

$Y_i = B_0 + B_1 X_{1i} + B_2 X_{2i} + \cdots + B_k X_{ki} + U_i$ such that $i = 1, 2, \ldots, k$ Whereas;

Y_i: is one of the values taken by the dependent variable Y, Total Fertility Rate (TFR).

X_i: is one of the values taken by the independent variable

k: number of independent variables

B_0: the constant part

B_i: random regression coefficients

U_i: random variable of error

Based on the data obtained from Jordanian Department of Statistics for 2007 and 2012. Adscription of the independent variables used in the multiple regression analysis was given, including demographic and socio-economic ones, considering the total fertility rate as the dependency variable, as shown in table (4).

Table (4): The correlation coefficients between total fertility rate and a set of demographic, economic and social variables.

No.	Variable	Code	The correlation coefficient with the total fertility rate
1	Average age at first marriage	X_1	-0.928
2	Proportion of females in labor force	X_2	0.394
3	Proportion of housing-related public water network	X_3	0.194
4	Proportion of housing-related public electricity network	X_4	0.0
5	Proportion of housing-related sewage network	X_5	0.061
6	Number of hospitals	X_6	0.267
7	Number of doctors	X_7	-0.098
8	Number of nurses	X_8	0.01
9	Number of pharmacists	X_9	0.116
10	Number of legal midwives	X_{10}	0.166

Correlation Matrix Analysis

Matrix showed strong negative correlation between total fertility rate and average age at first marriage, and weak negative one with number of doctors, affected by the greater awareness of the female as age increases, and the availability of medical signs and tips with the increasing number of doctors.

It is also shown that there is a positive correlation between the total fertility rate and demographic variables :proportion of housing- related public water network and sewage network, economic variable of the proportion of females in labor force and the social ones: number of hospitals, nurses, pharmacists and midwives. Finally, the study showed the absence of any correlation between the total fertility rate and the proportion of dwellings equipped with electricity due to the stability of the ratio for all years of the study.

Table (5): Multiple regression results for total fertility rate with Demographic, economic and social variables

Independent Variable	Code	B	t-ratio	Sig.
Constant of equation	Constant	14.85	8.192	0
Average age at first	X_1	-0.537	-4.420	0

marriage				
Proportion of females in labor force	X_2	0.376	8.298	0
Proportion of housing-related public water network	X_3	0.165	5.680	0
Proportion of housing-related sewage network	X_5	0.261	2.262	0.045
Number of hospitals	X_6	0.67	2.086	0.048
Number of nurses	X_8	0.617	3.15	0.004
Number of legal midwives	X_{10}	0.265	1.48	0.052
Explaining variance	R^2	0.741	-	-

Regression Analysis

Taking the independent variables that have a statistically significant correlation with the dependent variable (total fertility rate), the results of regression analysis showed that the variables: average age at first marriage, proportion of females in labor force and percentage of homes connected to the public network of water are variables to have a correlation relation with high statistically significant with fertility more than other independent variables. Rise in the average age at first marriage means delayed child-bearing age to start, which negatively affects the fertility rate: It is the most influential variable on the total fertility rate study showed. The rest of the variables listed in the table also influenced the direction of positive uneven ratios on total fertility rate, as shown in the table .All these variables together explained 0.741 of change in fertility.

Results

Summarizing the most important results in the study we get:

1. There is a possibility to achieve lower levels in fertility rate in different regions according to their nature, where the total fertility rate levels are lower in urban areas than in rural areas.
2. The limited change on the factors that affect fertility, where the most important one is the average age at first marriage led to a slight decline in fertility levels during the period 2007 to 2012, supported by the entry of women into work and the high level of living and health conditions.
3. The variables: average age at first marriage, proportion of females in labor force, proportion of housing-related public water network and drainage health and number of hospitals, doctors, nurses, pharmacists and midwives are the most important variables that have a statistically function with fertility through multiple regression equation, where these variables interpret 0.741 of changes in fertility rate.

Recommendations

Most important recommendations of this study, based on previous results can be summarized as follows:

1. Reducing total fertility rate could be achieved as raising age of first marriage for females, as raising awareness and health education in the local community through medical tips and instructions.
2. Increasing rates of education among females will have a special impact in reducing fertility rates since it will delay age of marriage, which will reduce the reproductive years of women.
3. Work on the budget situations of urban and rural areas of the social aspect and the arrival of services for the majority of the population.

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